uvex

A South African

Employers' guide to effective hearing protection

Our ability to hear the world around us is an incredible privilege. It allows us to enjoy music, time with family and the beautiful sounds of nature. Our ears also perform critical functions such as helping us to communicate, balance, function at work and they also act as a safety mechanism themselves, detecting hazards or warning signals which provides us with sufficient time to protect ourselves or escape from danger.
But too much noise can cause permanent and disabling damage in the form of noise induced hearing loss. **A serious and common occupational injury which places hearing protection into the highest PPE Risk Category III due to the irreversible damage to one's health.**

The gift of hearing needs to be cherished and protected.

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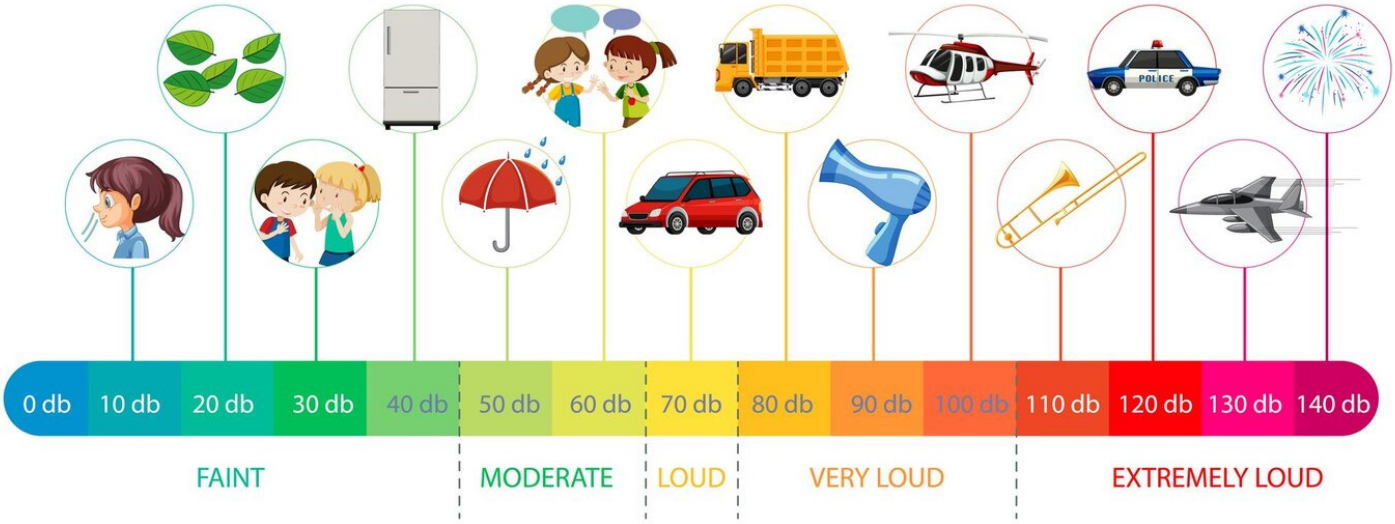
What is noise?

Noise is unwanted sound that can cause damage at raised levels. Noise is measured in decibels (dB). The higher the decibels, the greater the volume, sound wave energy and vibrations. Different types of noise produce different frequencies, this determines the tone of the noise and it's wavelength.

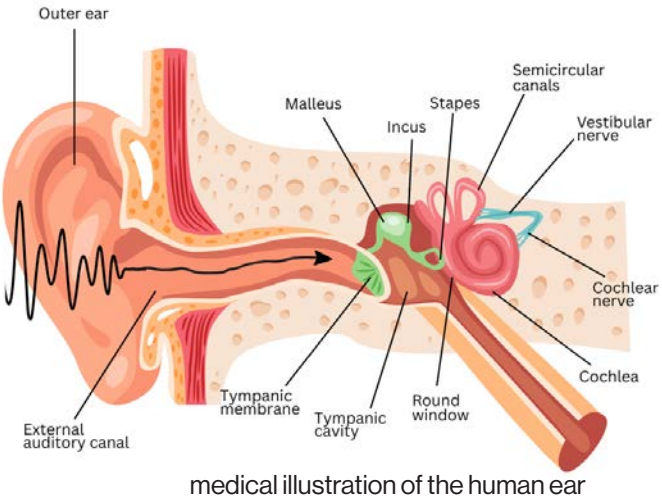
Here are some everyday noise examples and how many decibels they produce:



The amazing process of how hearing works!

Sound waves produced by the source of the noise travel through the air in the form of vibrations. The sound waves enter the outer ear, also known as the pinna or auricle, and are funnelled into the ear canal. The sound waves travel down the ear canal, causing the eardrum (tympanic membrane) to vibrate which is connected to the middle ear. The vibrations from the eardrum are transmitted through three small bones in the middle ear, called auditory ossicles, to the cochlea, a spiral-shaped structure. The cochlea is lined with thousands of tiny hair cells that convert the vibrations into electrical signals that are transmitted to the auditory nerve, which carries them to the brain. Our brain then interprets the electrical signals as sounds at varying frequencies or tones, allowing us to perceive and understand the world around us.

Overexposure of these delicate components ultimately leads to wear and tear on the hairs and nerve cells in the cochlea, and this results in hearing loss. In mild and short exposure, hairs can recover however if overexposure continues permanent and irreversible hearing loss occurs.



medical illustration of the human ear

What is noise induced hearing loss?

A type of hearing loss that occurs over time due to prolonged exposure to raised noise levels without adequate protection.

Noise-Induced Hearing Loss is the most common occupational injury experienced globally! Although preventable it still affects millions of employees annually.

In South Africa "Noise-induced hearing loss has displaced tuberculosis and silicosis as the top priority health threat in the mining industry."

Dr Thuthula Balfour (Head of Health: Minerals Council South Africa), African Mining Indaba Cape Town, 2024

At uvex, we believe one of the key contributors to high Noise-Induced Hearing Loss (NIHL) cases is a lack of knowledge and training. That's why the local Occupational Health and Safety Act (Act 85 of 1993) and its NIHL Regulations (section 4.2) require employers to provide annual hearing conservation refresher training.

To comply, employers must conduct this training and keep long-term records of employee attendance.

Hearing Conservation Training:

In line with our mission of protecting people, uvex has partnered with occupational hygienists, audiologists, and South African authorities to offer a free online eLearning hearing conservation course for all uvex hearing protection customers. This helps businesses protect employees, stay compliant, and reduce NIHL injuries.

The localised training meets all legal criteria, is available in English and Zulu, and includes locally filmed videos and a short quiz. Upon completion, uvex issues digital certificates per employee. The training takes around 25 minutes and should be retaken yearly by all noise-exposed staff.

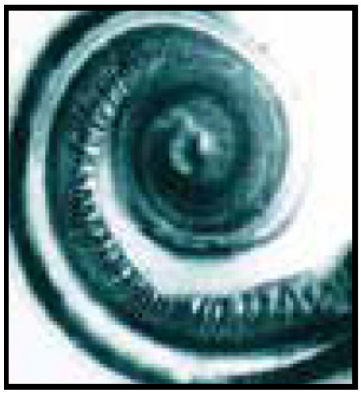
Register for the uvex eLearning hearing conservation here

Noise Exposure

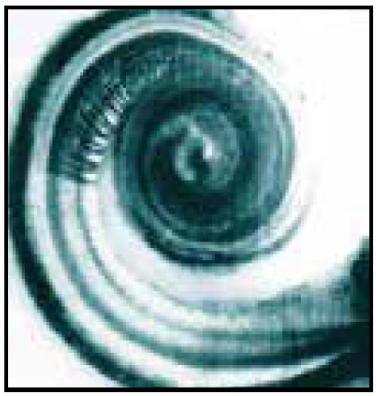
Noise exposure refers to the total amount of sound energy a person is subjected to over a period of time. In noisy workplaces, especially those involving machinery, tools, or vehicles, this can lead to Noise-Induced Hearing Loss (NIHL) — a permanent and preventable condition.

Listed below are the maximum periods of time that a person can be exposed to harmful noise per day. Any exposure over and above these limits may result in hearing loss.
The domestic noise-rating limit set by the Advisory Council of OHS is 85dB set as a noise level averaged over an 8-hour working day / exposure.

Note: The sound energy doubles in increments of 3dB, therefore as the noise level increases by 3dB the exposure time halves.



Healthy cochlea



Noise induced damaged cochlea

Noise Level	Exposure Time
80 dB	*
82dB	16 hours
85dB	****8 hours**
88dB	4 hours
91dB	2 hours
94dB	1 hour
100dB	15 min

* Hearing protection must be provided / optional to be worn
** Hearing protection compulsory to be worn

Safety Acts and Regulations

A great starting point for employers to seek information and guidance. The primary function of the local health and safety acts is to safeguard the health and safety of workers and to provide the rights and responsibilities of both the employer and the employees.

- **Mine Health and Safety Act 29 of 1996**
- **Occupational Health and Safety Act 85 of 1993**

These acts should be followed stringently to achieve compliance and as the first point of reference in implementing a Hearing Conservation Plan for the business.

Hearing Protection Device (HPD) Standards

PPE Regulation (European Regulation) 2016/425
The Regulation lays down requirements for the design, manufacture and supply chain of personal protective equipment (PPE) to ensure the health and safety of users. Compliance to the PPE Regulation improves credibility as audits/testing is completed periodically by approved independent notified bodies.

Local Product Compliance:
SABS (South African Bureau of Standards) and SANS (South African National Standards) have adopted the European standard EN 352 that regulates general requirements for hearing protection as SANS 50352.

Subcategories of common hearing protectors:

I. **SANS 50352-1 Earmuffs**
II. **SANS 50352-2 Earplugs**
III. **SANS 50352-3 Earmuffs attached to a safety helmet**

Ensure that the product selected meets the appropriate standard above.

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Steps to achieving effective hearing protection:

1 Noise Exposure Risk Assessment

The employer should appoint a competent person to identify the source/s of the concern that may lead to hearing loss.
This could be high noise levels and / or ototoxic chemicals and / or whole-body vibration.
Develop a documented action plan.

8 Medical Screening & Health Surveillance

To be conducted on the employee upon commencement of employment, periodically (max bi-annually) thereafter and upon exit.
Having a baseline audiometric test indicates the employees' start point, which subsequent tests are compared against to track any deterioration in hearing thereafter so that it can be flagged and initiate corrective action to prevent further shifts. Findings here may also influence the HPD selection, as per step 5.
Records should be kept on file for 40 years after exit.

7 Hearing Conservation Training

To be provided to employees upon commencement of employment and annually thereafter by a competent person:

Training content outlined in the Hearing Loss Regulations. Includes correct use and limitations of PPE.

6 Select Appropriate HPD/s

The HPD selected should conform to local standards and be certified in accordance to EN 352 and/or SANS 50352. It should provide the attenuation (SNR rating) as determined by step 4 as well as be fit for purpose as per step 5.

Essentially, the HPD in conjunction with the other controls must reduce the exposure to below the limit.

These steps to achieving effective hearing protection is merely a summarized guide from a PPE perspective. The Conservation Plan for your business. The primary function of the local health and safety acts is to safeguard

2 Apply Hierarchy of Controls

ELIMINATION	Physical removal of hazard
SUBSTITUTION	Replace the source of the hazard
ENGINEERING CONTROLS	Isolate people from the hazard
ADMINISTRATIVE CONTROLS	Changes to the way people work
PPE	Protect worker with equipment

3 Noise Assessment

Commission an Approved Inspection Authority to record the noise levels.
Must be done every 24 months.

4 Calculate the correct attenuation required

Correct SNR Single Number Rating Calculation Method:
Qualified users:
(noise level)-(SNR) = between 70 dB – 79 dB
Unqualified users: (see pg. 12)
(noise level)-((SNR)-(de-rating)) = between 70 dB – 79 dB
De-ratings: Earmuffs and Reusable Earplugs -5dB
Disposable Foam Earplugs -9dB
Moulded Earplugs -3dB

When using dual protection: refer to the higher of the two SNR ratings, apply de-rating and then add 5dB. Ensure PPE is compatible and that there are no obstructions interfering with performance.

5 Consider practical fit for purpose requirements

Practical Factors to consider (incl but not limited to):
Comfort / Fit / Environment / Presence of Ototoxic substances / Temperature / Dirt / Confined Spaces / Exposure Duration / Donning and Doffing considerations / pre-existing conditions / other PPE worn etc.
These factors will determine which type of HPD is fit for purpose.

local acts should be followed stringently to achieve compliance and as the first point of reference when implementing a Hearing the health & safety of workers and to provide the rights and responsibilities of both the employer and the employees.

• Occupational Health and Safety Act 85 of 1993 • Mine Health and Safety Act 29 of 1996

uvex hearing protection range: Earplugs

banded ear plugs

uvex x-fold banded earplugs

Art. No.	2125344
Replacement plugs	2125351
Design	with foldable band
Colour	grey, sky blue, lime
SNR 26dB	

uvex x-cap banded earplugs

Art. No.	2125361
Replacement plugs	2125351
Design	with band
Colour	grey, sky blue, lime
SNR 23dB	

reusable ear plugs

uvex whisper reusable earplugs

Art. No.	2113002
Version	small size with cord
Colour	orange
SNR 29dB	

uvex whisper supreme reusable earplugs

Art. No.	2111900
Version	large size with cord
Colour	yellow
SNR 30dB	

disposable ear plugs

uvex com4-fit disposable earplugs

Art. No.	2112004 / 2113027
Version	uncorded / corded
Colour	light orange
SNR 33dB	

uvex x-fit disposable earplugs

Art. No.	2112001 / 2113014
Version	uncorded / corded
Colour	lime
SNR 37dB	

uvex xact-fit disposable earplugs

Art. No.	2124001
Replace-ment plugs	2124002
Version	with reusable pin
Colour	lime
SNR 26dB	

uvex dispenser “one2click”

Art. No.	2112000
com4-fit dispenser refills	2112006
x-fit dispenser refills	2112003

moulded ear plugs

uvex high-fit duro

Art. No.	6170828
Colour	transparent
SNR 28dB	

uvex high-fit duro

Art. No.	6170832
Colour	transparent
SNR 32dB	

uvex hearing protection range: Earmuffs

uvex K-series earmuffs




uvex K1		uvex K2		uvex K3		uvex K4	
Art. No.	2600001	Art. No.	2600002	Art. No.	2600003	Art. No.	2600004
Colour	black, green	Colour	black, yellow	Colour	black, red	Colour	neon lime
SNR 28dB		**SNR 32dB**		**SNR 33dB**		**SNR 35dB**	

uvex K-series helmet earmuffs




uvex K10H		uvex K20H		uvex K30H		uvex helmet adapter	
Art. No.	2630210	Art. No.	2630220	Art. No.	2630230	Art. No.	2599994
Colour	black, green	Colour	black, yellow	Colour	black, red	Colour	black
SNR 28dB		**SNR 30dB**		**SNR 34dB**			

uvex K200 earmuff

uvex K200	
Art. No.	2600200
Colour	black, ochre
SNR 28dB	

uvex aXess one Bluetooth® earmuff


uvex aXess one		uvex aXess one helmet earmuffs	
Art. No.	2640001	Art. No.	2640201 - basic unit
Colour	matt black, grey	Art. No.	2699999 - complete unit
SNR 31dB		**SNR 27dB**	

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Calculating the correct attenuation

The domestic Occupational Health & Safety Act's advisory council set the maximum noise-rating limit at 85dB normalized to a nominal 8 hour working day.

However, the regulations do not specify an attenuation calculation method. Due to this, several different methods may be considered such as: SNR-method (European), NRR method (American), HML method (weighted to high, medium and low frequencies), Octave Band method (analyses sound levels in the ear).

To remain in-line with the EN European standard as adopted by SANS (SANS 50352) for HPDs in SA one should consider the European SNR (Single Number Rating) method to be the most appropriate calculation.

The goal is to achieve a residual noise level under 80dB (trigger value) but not lower than 70dB therefore the ideal range of residual noise is 70dB – 79dB.

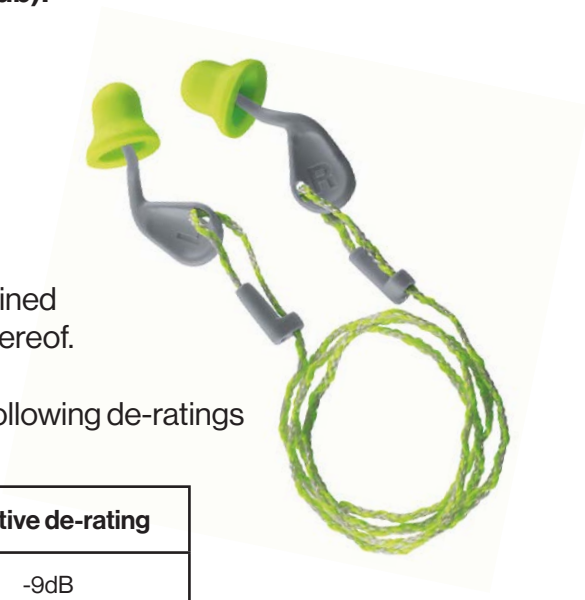
Residual Noise Level (8 hour exposure time)	
> 85dB	Hearing Loss will occur. Compulsory to wear hearing protection.
80dB – 85dB	Range is higher than recommended.
70dB – 79dB	The safest sound level range. Sufficient protection to prevent hearing loss.
< 70dB	Overprotected. Poor ability to communicate and hear warning signals. Wearer may feel a sense of isolation.

SNR Calculation Method:
EC directives 2002/44/EC and 2003/10/EC (modified 2021)*

noise level – SNR = should equal between 70dB – 79dB

eg: Noise Level 102dB – 25dB = 77dB Perfect!
In this scenario one can recommend an SNR value between 23dB – 32dB

The risk of too low an SNR value is Noise Induced Hearing Loss whilst the risk of too high an SNR value is Overprotection (where the residual noise level is below 70db).



Overprotection:
- Poor perception of warning signals
- User feels isolated
- Poor communication

*The above calculation should be used for qualified wearers.
Qualified User: Knowledgeable on proper use of HPDs. Regularly trained with practical exercises on correct fitting and insertion and checks thereof.

For unqualified users where there is greater risk of poor fitment, the following de-ratings should be applied.

HPD Type	Risk of poor fitment	Corrective de-rating
Disposable earplugs	High	-9dB
Reusable earplugs, banded HPD's and earmuffs	Medium	-5dB
Customised moulded earplugs	Low	-3dB

The calculation should now factor in the de-ratings as follows:
(noise level) – ((SNR) – (de-rating correction)) = should achieve between 70dB – 79dB

Calculating the correct attenuation

Product		SNR dB	Max Noise Level
x-fold		23dB	102dB
x-cap		24dB	103dB
xact-fit		26dB	105dB
high-fit duro 28		28dB	107dB
K1		28dB	107dB
K200		28dB	107dB
K10H		28dB	107dB
whisper		29dB	108dB
whisper supreme		30dB	109dB
K20H		30dB	109dB
aXess one		31dB	110dB
high-fit duro 32		32dB	111dB
K2		32dB	111dB
K3		33dB	112dB
com4-fit		33dB	112dB
K30H		34dB	113dB
K4		35dB	114dB
x-fit		37dB	116dB

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HPD Types - Advantages and disadvantages

When it comes to protecting your hearing, there's no one-size-fits-all solution. Whether you're using earplugs, earmuffs, or moulded plugs, each type of hearing protection device comes with its own set of advantages and disadvantages. Choosing the right option depends on factors like comfort, level of noise exposure, fit, and the environment you're working in. Let's take a closer look at the advantages and disadvantages for each type of hearing protection.

Earplugs and banded hearing protection:

Working conditions or other handicaps	Reusable earplugs	Disposable earplugs	Banded hearing protection
Repeated short-term noise exposure	0	×	√
Directional hearing, localization	√	√	√
Dirty hands	√	×	√
Working with gloves	√	×	√
Noise in the low frequency range	0	√	0
Limitation of fine motor skills	0	×	0
High ambient temperature	√	√	√
Improper anatomy of the auditory canal	×	×	√
Operated ears, or sensitive ear canals	×	×	0
Changing work areas, e.g. outdoor construction sites (missing hygiene facilities)	0	×	√

Recommended	√
Not recommended	×
Optional	0

Earmuffs	Moulded plugs
√	0
x	√
√	√
√	0
x	√
√	x
0	√
√	x
√	x
√	0

How to properly fit and remove hearing protection

To guarantee optimum hearing protection, uvex disposable hearing protection plugs must be used correctly. **It is important to wash your hands before handling your earplugs.**

disposable ear plugs

(1) Briefly roll down uvex disposable hearing protection plugs.

(2) Put your arm over your head and move the ear slightly upwards to straighten your auditory canal. This achieves a better fit.

(3) Insert plugs and hold in place while they expand. If they are not visible from the front, then they are in the right position.

Watch - How to insert disposable hearing protection plugs correctly

reusable ear plugs

(1) Take uvex reusable ear plugs by the handles and place the cord around your neck.

(2) Insert uvex ear plugs into the auditory canal, applying gentle pressure.

(3) The easiest way to remove the plugs is with a slight twisting/pulling motion. It is important not to do this on both sides at the same time and not too quickly. Lifting your ear to straighten the auditory canal when inserting and removing earplugs will improve fit and comfort.

Earmuffs

(1) Pull long hair back.

(2) Remove jewelry or other objects that interfere with the acoustic seal.

(3) Ears must be completely covered.

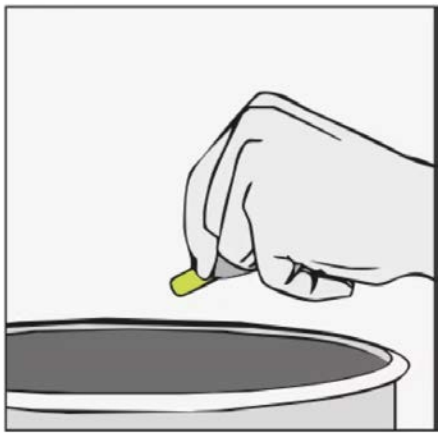
(4) Hats or scarves between head and hearing protectors may compromise the acoustic seal.

(5) The ear pads should be changed every six months to ensure a good seal and for hygiene requirements.

Hygiene

In dirty working environments, particles can easily stick to the surface of materials and cause minor injuries in the ears.

disposable ear plugs



Please dispose of uvex disposable hearing protection plugs after each use.

reusable ear plugs

(1) Easy to clean with uvex damp cleaning cloth.
(2) Alternatively, clean them with water and mild soap.
(3) Dry them and store in the uvex hygiene box when not in use.

Watch - How to insert and clean reusable ear plugs correctly

Fit testing - uvex xact-fit test system

Thanks to improved OHS practices, lost time injuries in SA are on the decline, HOWEVER Noise Induced Hearing Loss continues to buck the trend.

Applying traditional measures to combat NIHL is simply not working. Individuals have unique ear canals and work in a myriad of industrial settings, therefore HPD fit testing is critical to know the Personal Attenuation Rating (PAR) per employee to ensure adequate protection in line with the Occupational / Mine Health and Safety Act(s). Introducing a new portable and compact device that utilised the REAT method (Real Ear Attenuation at Threshold) to provide individuals with individual Personal Attenuation Levels. The system tests any brand of HPD in minutes and gives the employee actual results for their individual in ear fitment.

Hearing protection fit testing system that provides personal in-ear attenuation level for individual employees. Bluetooth-capable headphones allows for mobile, cordless testing. A preventative tool against noise induced hearing loss, offering peace of mind for employees and compliance for employers.

Why uvex xact-fit test?

Open System

- Can test most earplugs on the market
- No modifications to the earplugs necessary
- Uses Real Ear Attenuation at Threshold (REAT) method

Portable and wireless

- Bluetooth connectivity allows a test to be set up anywhere an internet connection is available
- Provides ability to carry out on-the-spot fit-tests on workers

Quick test results

- Tests both ear at the same time without compromising on accuracy
- Total test time of 2 to 5 minutes per person

Cloud - based software

- Receive regular software updates quickly and easily
- Automatic upload of information and results

Easy to use

- Simple to operate
- uvex will provide onboarding training and ongoing support to customers as needed

2124099

uvex xact-fit test	
Art. no.	2124099
Type	uvex xact-fit test system

* replacement parts are available on request

Watch the video here:

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10 Reasons to trust uvex with your hearing protection safety programme:

People's ability to hear forms such an important role in their lives, and too often the need for adequate protection and after-sales support is overlooked.

At uvex, we've ensured our products, training, e-learning and fitment programmes deliver a comprehensive, end-to-end service offering for our customers.

1

QUALITY:
World leading manufacturing of hearing protection devices of the highest quality and accurate attenuation.

2

SA LOCAL CONTENT:
We have been manufacturing HPDs in South Africa for decades.

3

STANDARDS AND REGULATIONS:
All uvex HPDs meet the highest local and international standards and corresponds to the applicable essential health and safety requirements which are contained in the PPE Regulation (EU) 2016/425.

4

TRAINING:
Free annual hearing conservation training programme compliant to local Occ. Health and Safety Act regulations. Offered electronically via eLearning or in person on-site in several local languages. Individual certification for compliance provided on completion.

5

COMMUNITY SUPPORT:
uvex safety SA partners up with Mental Health organisations in SA to assemble and package our product before shipping it off to the end user. In doing so we provide employment to individuals who otherwise battle to generate an income.

6

ACCURATE FIT TESTING SOLUTION:
The xact-fit hearing protection fit-testing system.

7

ON-SITE SUPPORT:
A personal on-site service with a national footprint throughout SA.

8

ZERO HARMFUL SUBSTANCES:
Reduce ear canal and skin irritations. All our HPDs are 100% free from harmful substances.

9

SUSTAINABILITY:
Our ISO 14001 certified production plant SWEDSAFE is the most sustainable hearing protection factory in the world. Using 100% renewable energy sources to power poduct. ZERO fossil fuels are used.

10

COMPLETE RANGE:
Standardise your entire workforce onto uvex products as a one-stop solution offering all product types incl.: Disposable HPDs, Reusable HPD's Banded Earplugs, Dispenser Solutions, Detectable HPDs, Dielectric HPDs, Earmuffs, Helmet clip-in earmuffs, Electronic Communiction Earmuffs, Customised Moulded Earplugs.

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DURBAN
Tel: 031 569 6780
e-mail: info@uvex.co.za

PRETORIA
Tel: 012 345 6656
e-mail: safety@uvex.co.za