HEARING PROTECTION







- Technical Data Information
- Earplugs
- Earmuffs



Technical Data Information

Noise Hazard

Humans have a multitude of senses, sight, hearing, taste, smell and touch. They are all as important as each other and without just one of them our lives are affected. Hearing empowers us and enriches our lives. Hearing enables us to socialize, work, interact, communicate and even relax.



Danger of Noise

Humans can generally discern sounds with frequencies between 20 Hz and 20,000 Hz (the audio range or hearing range) although this range varies significantly with age, occupational hearing damage and gender. The human ear is most sensitive to frequencies around 1,000-3,500 Hz. For workplaces such as textile mills, metal stamping, market or traffic area etc., you can progressively lose the ability to hear higher frequencies which leads to "Noise Induced Hearing Loss (NIHL) " and eventually total deafness.

Noise-Induced Hearing Loss 2 types:

- Temporary Threshold Shift, TTS is normally caused by exposure to intense and/or loud sounds or noise for any length of time. If you spend some time in a quiet place, your hearing can be recovered. It may take only a few hours for the symptoms to subside but it can also last for days.
- Noise-Induced Permanent Threshold Shift, NIPTS is when the ability to hear is reduced permanently which causes a permanent hearing loss.





- 1. Stand back 1 meter from the source of the sound.
- 2. Try and communicate under these circumstances.
- Check if you can hear normally or have to repeat or talk louder.
- 4. If you have to repeat or speak louder, it generally means the background noise is above acceptable levels.

Noise Limitation in the Workplace

In some workplaces, where the noise levels are extreme, the implementation of a hearing conservation programme is advisable. This facilitates the regular measurements of ambient noise levels and annual hearing tests for employees. Depending on the results obtained then a solution must be found which could be either reducing the noise level at source or issuing some form of hearing protection such as earplugs or earmuffs.



According to the National Institute for Occupational Safety and Health (NIOSH), if a noise level is over the threshold limit value then hearing protection must be worn and signage provided to remind employees that hearing protection must be worn at all times when exposed to the hazard.



Technical Data Information

Ear and Mechanical of Hearing

The cochlea is the hearing part of the inner car. The Organ of Corti is the sensory receptor inside the cochlea which holds the air cells, the nerve receptors for hearing. The mechanical energy from movement of the middle ear bones pushes in a membrane in the cochlea. This force moves the cochlea's fluids that, in turn, stimulate tiny hair cells. Signals from these hair cells are changed into nerve impulses. The nerve impulses are sent out to the brain by the cochlear portion of the auditory nerve. These nerve impulses are then carried on to other brain pathways that end in the auditory cortex (hearing part) of the brain. Exposure to excessive noise levels can destroy hair cells and subsequently loss of hearing.



Normal Hair Cells

Dead Hair Cells



Levels of Protection

The table below identifies the level of protection when comparing dB to the single number rating (SNR, to indicate the amount of protection offered by a correctly fitted hearing protection device) and the noise reduction rating (NRR, to describe a hearing protector based on how much the overall noise level is reduced by the hearing protector). This information is a guideline, not suitable for real noise in the workplace.

Noise: DB	Ear Protectors: SNR/NRR
85 - 90	< = 20
90 - 95	20 - 30
95 - 100	25 - 35
100 - 105	> = 30

The effectiveness of hearing protection is reduced greatly if the hearing protectors do not fit properly or if they are worn only part time during periods of noise exposure. So it is very important to learn how dangerous exposure to such noise hazards could be, how to protect your hearing and how to use and maintain any hearing protective device issued.

The human aspects of hearing protection are particularly important since the only useful kind of protection is the protection that is actually worn. It is a good idea for the employer to provide a number of different types of hearing protection from which workers can choose, keeping in mind any safety or hygienic reasons for not providing a particular kind of protector. Consideration must also be given to compatibility of any other PPE that may be worn at the same time.





Technical Data Information

Table: Some practical absorption coefficients for certain materials:

Frequency	125	250	500	1000	2000	3150	4000	6300	8000
Mean Attenuation dB(A)	15.4	19.2	27.8	37.3	35.0	39.2	37.2	36.5	36.6
Standard Deviation dB(A)	2.7	2.4	2.3	3.0	2.5	3.1	3.0	2.4	2.6

NRR is a NIOSH (USA) rating

SNR is a European Union (CE) rating

SLC is a rating number used in Australia & New Zealand

Table: Comparison of Hearing Protection

Earp	lugs	Earmuffs			
 Advantages Small and easily carried Convenient to use with ot equipment More comfortable for long areas. Convenient for use in corr Limitations Requires more time to fit 	her personal protective g-term wear in hot, humid work ifined work areas	 Advantages Variable attenuation amore Designed so that one size Easily seen at a distance their use Not easily misplaced or log May be worn with minor experimentations Less portable and heavier 	ng users e fits most head sizes to assist in the monitoring of ost ear infections		
 More difficult to insert and Requires good hygiene p May irritate the ear canal More difficult to see and p 	d remove practices monitor usage	 More inconvenient for use with other personal protective equipment More uncomfortable in hot, humid work area May interfere with the wearing of safety or prescription glasses by breaking the ear seal and thus reducing attenuation. 			
Foam	1. The plug is best rolled between the fingertips.	2. Use another hand to pull the outer ear (pinna) outward and upward and then insert the plug well into the ear canal.	3. Hold the plug until it is enlarged enough to hold itself in place.		
Pre-molded	1. Use another hand to pull the outer ear (pinna) outward and upward and then insert the plug well into the ear canal.	2 Control of the set 	3. The rest of earplug will be seen from outside.		

Your Safety DNA



Hearing Protection

EARS0053

Earplugs

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PVC cord prevents falling or loss.

Easy to clean with low containation from dust.

Yellow/

Blue

1 piece



allergenic, extra soft and moldable. Optimized for exceptional in-ear comfort, with three-flange design creates a better seal in the ear canal, delivering optimal protection and increased comfort for long-term wear.





facilitates easy insertion and removal, and allows the earplug to sit comfortably.

Silicone Corded Earplug



Silicone Corded Earplugs With Carry Case

Plastic box Safe and easy

to keep and carry.

Discription	Color	UOM	Package
ilicone Corded	Yellow/	1 piece	100 pieces/
arplug#EC-2001C+	Blue		box

PU Foam : Non Reusable

EARS0051

Manufactured from extra soft, malleable Polyurethane Foam.Easy to insert - Requires less pressure to roll down. Slow recovery rate gives plenty of time to correctly insert into the ear canal.

PU Foam Earplugs

FARS0055

PU Foam Farplugs

#EC-1001+

- 29d
- Noise reduction 29dB (Sound Level conversion: SLC80) Distinct orange color makes compliance checks easy. PVC cord Easy to clean.

PU Foam Corded Earplugs

				Che dimini Edebe
Code	Discription	Color	UOM	Package
EARS0054	PU Foam Corded Earplugs #EC-1001C+	Orange/ Blue	1 piece	100 pieces/ box





- Dispenser makes it easy for workers to access earplugs
- A simple turn of the hand drops earplug into a worker's hand one at a time
- Drained catch tray, with side durable plastic shields and construction safeguards earplugs in outdoor locations
- Versatile design allows for placing on countertops or wall mounting
- Bulk style dispenser eliminates waste from individually wrapped earplugs
- Accepts 8 different 3M[™] Earplugs in refill bottles

	NRR 33dB	NEW
- 1+	EarSoft Yellow Neons	AS/NZS 1270:2002

Orange

1 piece

Code	Discription	Color	UOM	
3M391-1004	EarSoft Yellow Neons	Yellow	bottle	500 pairs/ bottle



100 pieces/

200 pieces/

box

box



Hearing Protection

Earmuffs

Headband Earmuff

Headband Earmuff

Cap Attachable Earmuffs

- Provides optimum seal with low contact pressure.
- Lightweight & comfortable even during long term use.
- Sealing rings filled with a unique combination of liquid and foam.
- Double casing minimizes resonance and maximizes high frequency attenuation.
- Effective protection combined with a high level of comfort.

High performance ear defender.



ANSI S3.19-11

- Provides optimum seal with low contact pressure.
- Lightweight & comfortable even during long term use.
- Sealing rings filled with a unique combination of liquid and foam.
- Suitable for noise reduction in a noisy area of average 98 decibels.



- Double casing minimizes resonance and maximizes high frequency attenuation.
- High performance ear defender
- Effective protection combined with a high level of comfort
- Suitable for noise reduction in a noisy area of average 105 decibels.

Code	Discription	Color	UOM	Package
EARS0003	Headband Earmuff #H10A NRR30+	Black	1 piece	1 piece/box



Cap Attachable Earmuffs

- Modern, stylish slim line cup design.
- Large space inside cup aids the reduction of moisture & heat build-up.
- Soft wide cushions help reduce pressure around the ear.
- Can be used with all Pangolin safety helmets.
- Suitable for noise reduction in a noisy area of average 98 decibels.



Cap Attachable Earmuffs

- Double casing technology helps minimize resonance effect
- Allows good speech intelligibility
- Excellent attenuation for this class of hearing protector
- Can be used on all Pangolin safety helmets
- Suitable for noise reduction in a noisy area of average 105 decibels.

Code	Discription	Color	UOM	Package
EARS0028	Cap Attachable Earmuffs #H10P3E:	Black	1 piece	1 piece/box
				6

Your Safety DNA