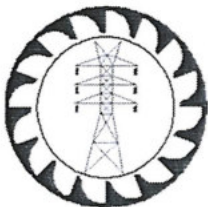

**SPECIFICATIONS FOR PERSONAL PROTECTIVE
EQUIPMENT**

HEARING PROTECTION

EAR PLUGS



**CEYLON ELECTRICITY BOARD
SRI LANKA**



Contents

1. SCOPE	3
2. SERVICE CONDITIONS.....	3
3. APPLICABLE STANDARDS	3
4. BASIC FEATURES AND TECHNICAL REQUIREMENTS	3
4.1 Materials	3
4.2 Minimum attenuation	4
4.3 Marking	4
4.4 Wearer information (to be supplied by the manufacturer)	4
5. TESTING	5
5.1 Test Certificates	5
6. QUALITY ASSURANCE	6
7. ADDITIONAL REQUIREMENTS	6
Packaging and Delivery	6
8. INFORMATION TO BE SUPPLIED WITH THE OFFER	6
9. SAMPLE STUDY.....	7
10. ANNEX.....	7



1. SCOPE

This specification specifies the requirements of Ceylon Electricity Board for ear-plugs.

2. SERVICE CONDITIONS

(i)	Annual average ambient temperature	30 °C
(ii)	Maximum ambient temperature	40 °C
(iii)	Maximum relative humidity	90%
(iv)	Environmental conditions	Humid tropical climate

3. APPLICABLE STANDARDS

The equipment and components supplied shall be in accordance with the latest edition of the standards specified below and amendments thereof.

(i)	BS EN 352-2: 2002	Hearing Protectors, General Requirements Part 2: Ear-plugs
(ii)	BS EN 13819-1: 2002	Hearing Protectors – Testing – Part 1: Physical Test Methods
(iii)	BS EN 13819-2: 2002	Hearing Protectors – Testing – Part 2: Acoustic Test Methods
(iv)	EN ISO 4869-2:1994	Acoustics – Hearing Protectors – Part 2: Estimation of effective A- weighted sound pressure levels when hearing protectors are worn

4. BASIC FEATURES AND TECHNICAL REQUIREMENTS

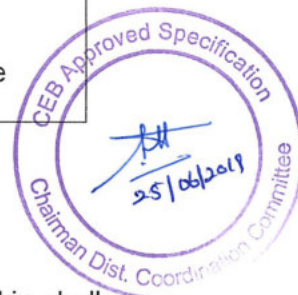
4.1 Materials

Those materials used in parts of ear-plugs coming into contact with the wearer's skin shall comply with the following requirements:

- a) The materials shall not be known to be likely to cause skin irritation, skin disorders, allergic reactions nor any other adverse effects to health within the lifetime of the use of the ear-plugs.
- b) when subject to contact with sweat, ear wax or with other materials likely to be found in the ear canal, the materials shall not be known to undergo changes within the lifetime of the use of the ear-plugs that would result in significant alteration to those properties of the ear-plugs

All parts of ear-plugs shall be designed and manufactured such that they are not liable to cause physical damage to the wearer when fitted and used according to the manufacturer's instructions.

Any part of the ear-plugs that is likely to protrude outside the ear canal when fitted in accordance with the manufacturer's instructions shall be of such a construction that mechanical contact with the ear-plugs is unlikely to cause any injury to the ear.



When inserted in accordance with the manufacture's instruction ear-plugs shall be capable of being readily and completely removed from the ear canal by the user, without the use of tools or instruments.

When ear-plugs are marked re-usable, re-closable packaging suitable to ensure hygienic storage between uses shall be supplied with each pair of ear-plugs.

If ear plugs are marked re-usable, after the ear-plugs have been cleaned and disinfected once, in accordance with the manufacturer's instructions, there shall be:

- a) No significant alteration to those initial properties of the ear-plugs.
- b) No changes that would be expected to cause any significant alteration to the attenuation characteristics stated in accordance with EN 13819-2.

4.2 Minimum attenuation

When tested in accordance with EN 13819-2 the values ($M_f - s_f$) of the ear plugs shall not be less than the values given in below table.

Frequency in Hz	125	250	500	1000	2000	4000	8000
($M_f - S_f$) in dB	5	8	10	12	12	12	12

M_f are the mean attenuation data and s_f the standard deviations as measured in accordance with EN 13819-2.

4.3 Marking

The ear-plugs or the smallest quantity packaging supplied by the manufacturer shall carry the following information:

- a) The name, trade mark of other identification of the manufacturer or his authorized representative;
- b) The model designation;
- c) The numbers of the EN standard
- d) Whether the ear-plugs are disposable or re-usable
- e) Instructions for fitting and use, which shall indicate the need for proper fitting;
- f) The nominal diameter designations of the ear-plugs (Except for semi-aural ear-plugs).

4.4 Wearer information (to be supplied by the manufacturer)

The following information for the wearer shall be supplied with the ear-plugs or with smallest quantity packaging supplied by the manufacture:

- a) the number of the European standard
- b) the name, trade mark of identification of the manufacture
- c) the model designation





- d) materials of the headband (where appropriate)
- e) instructions for fitting and use which shall indicate the need for proper fitting;
- f) except for semi-aural ear-plugs, the nominal diameter/range of diameters designation of the ear-plugs;
- g) for headband ear-plugs, the size range of the ear-plugs for each mode of wearing, on both the packaging/box and in wearer information:
- h) for each mode of wearing, the following sound attenuation values:
 - 1) Mean value and standard deviation at each test frequency
 - 2) APV- value at each test frequency in accordance with EN ISO 4869-2 with parameter = 1
 - 3) H-, M- and L- value in accordance with EN ISO 4869-2 with the parameter = 1
 - 4) SNR-value in accordance with EN ISO 4869-2 with the parameter = 1

Each set of values shall be given equal prominence.

- i) A recommendation that the wearer should ensure that:
 - 1) The ear-plugs are fitted, adjusted and maintained in accordance with the manufacture instructions
 - 2) The ear-plugs are worn at all times in noisy surroundings
 - 3) If the ear-plugs are marked re-usable, they are regularly inspected for usability
- j) A warning that, if the recommendations in 5.6 i) are not adhered to, the protection afforded by the ear-plugs will be severely impaired
- k) For ear-plugs which are fitted with an interconnecting cord, the following:
“Warning: These ear-plugs should not be used where there is a risk that the connecting cord could be caught up during use”.
- l) For headband ear-plugs, the following warning:
“Warning: Harmful noise levels may be induced if the headband is struck’
- m) If the ear-plugs are marked re-usable, methods of cleaning and disinfection which shall specify, and require the use of, agents that are not known to be harmful to the wearer;
- n) The statement “This product may be adversely affected by certain chemical substances. Further information should be sought from the manufacturer”;
- o) Recommended storage conditions before and after use;
- p) The mean mass of the ear plugs (for headband ear-plugs only) to the nearest gram;
- q) The address from which additional information can be obtained.

5. TESTING

The ear plugs should be subjected to the following tests according to the relevant standard. Test reports or a summary sheet of tests carried out should be submitted as specified in 5.1.

- i. Sizing and Adjustability
- ii. Cleaning and Disinfection (for re-usable ear plugs)
- iii. Minimum attenuation

5.1 Test Certificates

A *summary sheet* of the tests carried out shall be submitted where the summary sheet clearly shows the equipment concerned, the manufacturer's identity, the tests carried out,

test results and the standard's requirements against the test results to determine passing or failing of the test.

The summary sheet shall be from the accredited independent testing laboratory where the testing was carried out and this testing laboratory shall be acceptable to the purchaser. Proof of accreditation of the testing laboratory by a national/international authority shall be forwarded if requested by the purchaser.

Submission of individual test reports is not necessary if duly authenticated summary sheet is submitted as described above.

6. QUALITY ASSURANCE

The manufacturer shall possess valid ISO 9001:2008 (or the latest edition) Quality Assurance certifications for the plant where the manufacture of equipment is done.

Bidders shall furnish a copy of the ISO certificate certified as true copy of the original by the manufacturer, along with the offer.

7. ADDITIONAL REQUIREMENTS

Packaging and Delivery

Each pair of ear plugs shall be packaged in an individual container or package of sufficient strength to properly protect the product from damage. The outside of the container or package shall be marked as specified in the relevant standard.

The type of packaging suitable for transport shall be defined by the manufacturer.

At the request of the customer or according to government specifications any additional or amended instructions shall be included in the package.

The selected bidder shall supply all relevant drawings, technical literature, hand books etc. in English.

8. INFORMATION TO BE SUPPLIED WITH THE OFFER

The selected bidder shall supply all relevant drawings, technical literature, hand books etc. in English.

The bid shall be accompanied with the following also;

- a) English version of catalogues describing the equipment and indicating the type/model number.
- b) Technical literature in English describing the constructional and operational features, relevant drawings etc. of the equipment.
- c) Information on the following:
Instructions for use, information on storage, fitting and adjustment, handling, cleaning, disposal, periodic inspection, periodic testing and useful service life
- d) Packing details.



- e) Completed schedule of particulars as per Annex A.
- f) Test reports or summary sheet conforming to clause 5.

9. SAMPLE STUDY

One sample of the offered equipment including accessories if any, shall accompany the bid to facilitate analysis and evaluation. Any additional sample may be requested by the purchaser if such deemed necessary.

10. ANNEX

Annex A - Schedule of Guaranteed Technical Particulars



SCHEDULE OF GURANTEED TECHHNICAL PARTICULARS

(CEB Requirements shall be filled by the procurement entity and information of the offer shall be filled by the manufacturer/supplier)

Ear Plugs			
Specific Requirements			
Sr No	Item	Requirement	Offered
1.	SNR Value	Should be a value between ___ to ___	
2.	Usage	<input type="checkbox"/> Reusable <input type="checkbox"/> Disposable	
3.	Interconnection of Ear Plugs	<input type="checkbox"/> By a cord <input type="checkbox"/> By a band <input type="checkbox"/> Not Required	
General Requirements			
Sr No	Item	Requirement	Offered
4.	Brand	specify	
5.	Model	specify	
6.	Country of Manufacture	specify	
7.	Applicable Standard	BS EN 352-2	
8.	Material of the Ear Plug	specify	
9.	Year and Month/Quarter of Manufacture	Manufactured within two years before the bid closing date.	
10.	Marking on the equipment	Please refer clause 4	
11.	Test Reports/ Summary Sheet submitted	Yes, Please refer clause 5	
12.	Quality Assurance for Manufacturer	Yes, Please refer clause 6	
13.	Samples	Yes, Please refer clause 9	
14.	Warranty	Specify	
15.	Packing details submitted	Yes, Please refer clause 8	
16.	Information on the following should be submitted Instructions for use, information on storage, shelf life, fitting and adjustment, handling, cleaning, disposal, periodic inspection, periodic testing	Yes, Please refer clause 8	

I/We certify that the above data are true and correct

.....
Signature of the Bidder/Manufacture and Seal

.....
Date

