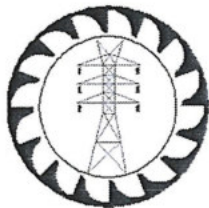


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CEB
SPECIFICATION

SPECIFICATIONS FOR PERSONAL PROTECTIVE EQUIPMENT

EYE PROTECTION



CEYLON ELECTRICITY BOARD
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1. SCOPE

This specification specifies the requirements of Ceylon Electricity Board for eye protectors to minimize the occurrence and severity or prevention of injuries from impact, chemical and dust hazards. Hazards such as heat (furnace operation), welding, radiation, glare (sun glasses) etc. are not covered in this specification.

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 166	Personal eye protection. Specifications
(ii)	ANSI/SEA Z87.1	American National Standard for Occupational and Educational Eye and Face Protection Devices

4. BASIC FEATURES AND TECHNICAL REQUIREMENTS

Eye protectors shall be constructed of materials that shall be free from visual defects and shall meet performance requirements specified in the applicable standards.

Eye-protectors shall be free from projections, sharp edges or other features which could cause discomfort. The materials of construction shall be selected as would avoid skin irritation.

Head bands, when used, shall be of good quality and durable. Adjustable parts or components incorporated in eye protectors shall be easily adjusted and replaced.

Protector lenses shall be free of striae, bubbles, waves and other visible defects which would impair their optical quality.

4.1 Filter Type and Scale Number

Filter Type and Scale Number shall be specified according to the relevant standard as follows:

4.1.1 BS EN Standard

The transmittance characteristics of a filter shall be represented by a scale number.

The scale number is a combination of the code number and the shade number of the filter, joined together by a dash. The higher the shade number, the higher the filtration.



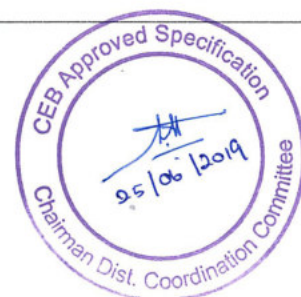
The scale number for welding filter does not include a code number; it comprises the shade number only.

Below table gives the designation of the various types of filter specified in the BS EN Standard.

Welding Filters	Ultraviolet Filters		Infrared Filters	Filters for Sunglare	
	No number code	Code number 2	Code number 3	Code number 4	Code number 5
Scale number					
1,2	2 – 1,2	3 – 1,2	4 – 1,2	5 – 1,1	6 – 1,1
1,4	2 – 1,4	3 – 1,4	4 – 1,4	5 – 1,4	6 – 1,4
1,7		3 – 1,7	4 – 1,7	5 – 1,7	6 – 1,7
2		3 – 2	4 – 2	5 – 2	6 – 2
2,5		3 – 2,5	4 – 2,5	5 – 2,5	6 – 2,5
3		3 – 3	4 – 3	5 – 3,1	6 – 3,1
4		3 – 4	4 – 4	5 – 4,1	6 – 4,1
4a					
5		3 – 5	4 – 5		
5a					
6			4 – 6		
6a					
7			4 – 7		
7a					
8			4 – 8		
9			4 – 9		
10			4 – 10		
11					
12					
13					
14					
15					
16					

NOTE Code number key :

- 2 Ultraviolet filter, colour recognition may be affected ;
- 2c/3 Ultraviolet filter, good colour recognition ;
- 4 Infra – red filter ;
- 5 Sunglare filter without infrared specification ;
- 6 Sunglare filter with infrared specification.



4.1.2 ANSI/ISEA Standard

Below table gives the designation of the various types of filter specified in the ANSI/ISEA Standard.

Filter Type	Symbol
Infrared	R and scale number (from R1.3 to R10)
Visible Light (Glare)	L and scale number (from L1.3 to L10)
Ultra Violet	U and scale number (from U2 to U6)
Welding	W and shade number (from W1.3 to W14)
Variable Tint	V
Special Purpose	S

4.2 Mechanical Impact

Mechanical Impact shall be tested and marked as per relevant standard.

4.2.1 BS EN Standard

Eye protectors shall be marked according to their mechanical strength as mentioned in the below table.

Symbol	Description of the level of impact
S	Increased robustness
F	Low energy impact
B	Medium energy impact
A	High energy impact

Minimum CEB requirement shall be the ability to withstand Low Energy Impact (or higher) denoted by "F" on the frame and the lens (as applicable) of the eye protector.

4.2.2 ANSI/ISEA Standard

Impact Rated eye protectors shall be marked with "+" mark according to ANSI/ISEA Standard.

4.3 Direct/Indirect Ventilation

Ventilation of the eye protector shall be provided as required in the Schedule of Guaranteed Technical Particulars

4.4 Anti-Fog/ Anti-Scratch Features

Anti-Fog/ Anti-Scratch Features of the eye protector shall be provided as required in the Schedule of Guaranteed Technical Particulars

4.5 Marking

4.5.1 Eye Protectors Conforming to BS EN Standard

The frame and the lens shall be marked separately. If the lens and the frame form a single unit, the complete marking shall be applied to the frame



4.5.1.1 Marking on the lens

Each Eye Protector which is claimed to comply with the requirements of BS EN 166 standard shall bear a label and/or marking giving the following information on the lens.

- i. Scale Number
- ii. Identification of the Manufacturer
- iii. Optical Class (except for cover plates)
- iv. Symbol for Mechanical Strength
- v. Additional Requirements as follows;

Additional Requirement	Symbol
Resistance to short circuit electric arc	8
Non-adherence of molten metal and resistance to penetration of hot solids	9
Resistance to surface damage by fine particles	K
Resistance to fogging	N
Enhanced reflectance	R

4.5.1.2 Marking on the frame

Each Eye Protector which is claimed to comply with the requirements of BS EN 166 standard shall bear a label and/or marking giving the following information on the frame.

- i. Identification of the Manufacturer
- ii. Number of the standard (i.e. 166)
- iii. Fields of use as follows

Symbol	Designation (Fields of use)	Description of the field of use
No symbol	Basic use	Unspecified mechanical hazards and hazards arising from ultraviolet, visible, infra- red and solar radiation
3	Liquids	Liquids (droplets or splashes)
4	Large dust particles	Dust with a particle size of $> 5 \mu\text{m}$
5	Gas and fine dust particles	Gases, vapours, sprays, smoke and dust with a particle size $< 5 \mu\text{m}$
8	Short circuit electric arc	Electrical arc due to a short circuit in electrical equipment
9	Molten metals and hot solids	Splashes of molten metals and penetration of hot solids



- iv. Symbol for Mechanical Strength
- v. Symbol to indicate that the eye protector is designed to fit a small head (where applicable)
- vi. Higher lens scale number compatible with the frame (where applicable)

4.5.1.3 Marking of Eye Protectors Where the Frame and Lens Form a Single Unit

The marking shall comprise the full lens marking, a hyphen, the number of this standard and then any appropriate symbols for field of use and level of impact.

4.5.2 Eye Protectors Conforming to ANSI/ISEA Standard

Each Eye Protector which is claimed to comply with the requirements of ANIS/ISEA Z87.1 standard shall bear a label and/or marking giving the following information according to following table.

Type of Mark	Lenses & Replacement Lenses		Frame ¹	Marking for Complete Device (no replaceable parts) ²
	Spectacles	All Other		
All protectors shall bear the markings below.				
Manufacturer's Mark or Logo	Yes	Yes	Yes	Yes
Standard Plano Rx (Prescribed)		Z87 Z87	Z87 Z87-2	Z87 Z87-2
Coverage (small head sizes) ³	H		H	
The following shall be required only when claims of impact rating, a specific lens type and/or use are made by the manufacturer.				
Impact Mark Impact Rated Plano Impact Rated Rx	+ +	Z87+ Z87+	Z87+ Z87-2+	Z87+ Z87-2+
Lens Type Clear Welding UV Filter Visible Light Filter IR Filter Variable Tint Special Purpose	<i>W shade</i> <i>U scale number</i> <i>L scale number</i> <i>R scale number</i> V S	<i>W shade</i> <i>U scale number</i> <i>L scale number</i> <i>R scale number</i> V S		<i>W shade</i> <i>U scale number</i> <i>L scale number</i> <i>R scale number</i> V S
Use Splash / Droplet Dust Fine Dust			D3 D4 D5	D3 D4 D5



1. Frame components subject to marking vary by type of projector.
 - Spectacles: Front and at least one temple. Both detachable side shields are marked Z87+, if impact rated
 - Goggles: Frame and lens housing or carrier
 - Face shields: Headgear/ adapter, crown and chin protector
 - Welding helmets and hand shields: Headgear/ adapter, shell and lens housing or carrier
 - Respirators: None
 - Prescription frames: Size marking on front and temples in accordance with ANSI Z80.5-2004
2. A complete device (no replaceable components) shall have at least one set of markings. The markings may be on the lens or the frames or both the lens and the frame.
3. For spectacle protectors, coverage marking "H" shall be on the lens for rimless or semi-rimless lens retention systems.
4. "Filter" include: UV, Visible and IR Light Filters. In case of multiple filter type compliance, designations shall be listed in the order given in this table: U, L, R.

5. TESTING

The Eye Protectors shall be subjected to the following tests according to the relevant standard. Test reports *or* a summary sheet of tests carried out shall be submitted as specified in clause 5.3.

5.1 Tests for Eye Protectors that are Conforming to BS EN Standard

- i. Optical Quality Test
- ii. Transmittance Test
- iii. Field of Vision
- iv. Protection Against High Speed Particles (Energy Impact)
- v. Droplet and Splash Test
- vi. Dust Test
- vii. Surface Damage by Fine Particles (if applicable)
- viii. Fogging (if applicable)

5.2 Tests for Eye Protectors that are conforming to ANSI/ISEA Standard

- i. Optical Quality Test
- ii. Transmittance Test
- iii. Haze Test
- iv. Impact Tests
- v. Droplet and Splash Test
- vi. Dust Test



5.3 Test Reports

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 latest 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 eye protector 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 according to 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.

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

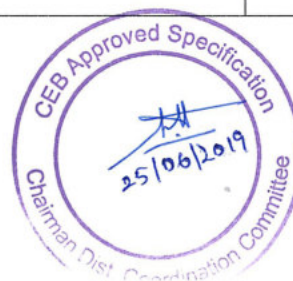
Annex A - Schedule of Guaranteed Technical Particulars



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)

Eye Protection			
Specific Requirements			
Sr No	Item	CEB Requirement	Offered
1	Required Eye Protector type	<input type="checkbox"/> Safety Goggle <input type="checkbox"/> Face Shield	
2	Filter Type and Scale Number	<input type="checkbox"/> Not required <input type="checkbox"/> Specify _____	
3	Mechanical Impact	<input type="checkbox"/> Low impact (indicated by F) or higher as per EN Standard or Impact Rated indicated by "+" mark as per ANSI Standard <input type="checkbox"/> Other _____	
4	Field of Use	<input type="checkbox"/> Protection against Liquids (indicated by 3 as per EN standard or D3 as per ANSI standard) <input type="checkbox"/> Protection against Large Dust Particles (indicated by 4 as per EN standard or D4 as per ANSI standard) <input type="checkbox"/> Protection against Gas and Fine Dust Particles (indicated by 5 as per EN standard or D5 as per ANSI standard) (Multiple options can be chosen from above as required)	
5	Anti-Fog & Anti-Scratch features for lens	<input type="checkbox"/> Anti Fog <input type="checkbox"/> Anti Scratch	
6	Ventilation	<input type="checkbox"/> Direct <input type="checkbox"/> Indirect <input type="checkbox"/> No Ventilation	
7	Optical Class of Lens	1	



General Requirements			
Sr No	Item	Requirement	Offered
8	Brand	specify	
9	Model	specify	
10	Country of Manufacture	specify	
11	Applicable Standard	BS EN 166 or ANSI/ISEA Z87.1	
12	Any special designs/features, if available	specify	
13	Year and Month/Quarter of Manufacture	Manufactured within two years before the bid closing date	
14	Marking on the equipment	Please refer clause 4.5	
15	Test Reports/ Summary Sheet submitted	Please refer clause 5	
16	Quality Assurance for Manufacturer	Please refer clause 6	
17	Samples	Please refer clause 9	
18	Warranty	specify	
19	Packing details submitted	Please refer clause 8	
20	Product catalogues, technical literature submitted	Please refer clause 8	
21	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	Please refer clause 8	

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

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

.....
Date

