

BUREAU OF INDIAN STANDARDS

DRAFT FOR COMMENTS ONLY

(Not to be reproduced without permission of BIS or used as an Indian Standard)

**भारतीय मानक मसौदा
अपशिष्ट प्रबंधन के लिए पीपीई के चयन के लिए गाइड**

Draft Indian Standard

GUIDE FOR SELECTION OF PPE FOR WASTE HANDLING

(ICS 13.340.01)

Occupational Safety and Health Sectional
Committee, CHD 08

Last Date for Comments: **13 March 2025**

FOREWORD

(formal clause to be added later)

Personal protective equipment, commonly referred to as 'PPE', is equipment worn to minimize exposure to hazards that cause serious workplace injuries and illnesses. These injuries and illnesses may result from contact with chemical, radiological, physical, electrical, mechanical, or other workplace hazards. Personal protective equipment may include items such as gloves, safety glasses and shoes, earplugs or muffs, hard hats, respirators, coveralls, vests and full body suits.

It is necessary to wear appropriate PPE during waste Material Handling

Due to the growing awareness of safety in the industrial sector and introduction of various acts for implementing directives of the statutory bodies, the need has been felt to formulate this Indian Standard which will give a guideline to select appropriate Indian standard for selection of PPE for waste handling. It may be reviewed from time to time for inclusion of newer elements

Draft Indian Standard

GUIDE FOR SELECTION OF PPE FOR WASTE HANDLING

1 SCOPE

1.1 This standard describes the guideline for selection for PPE to be used during waste handling.

1.2 This standard does not cover hazards relating to radioactive substances.

2 REFERENCES

The Indian Standards given in Annex A contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions.

3 TERMINOLOGY

3.1 Filtering Half Mask — A filtering half mask is one which covers the nose and mouth and possibly the chin and

- a) Consists entirely or substantially of filter material; and
- b) Comprises a face piece in which the main filter(s) form an inseparable part of the device and where the pre-filter may be replaceable.

3.2 Full Face Mask — A tight fitting face piece covering mouth, nose, eyes and chin half mask. A tight fitting face piece covering mouth, nose and chin.

3.3 Gas Filter — Filter intended to remove specified gases and vapours from the flow of air passing through it.

3.4 Combined Filter — Filter intended to remove dispersed solid and/or liquid particles and specified gases and vapours from the flow of air passing through it.

3.5 Particulate Filter — Filter intended to remove dispersed solid and/or liquid particles from the flow of air passing through it.

3.6 Open-Circuit Compressed Air Breathing Apparatus — Self-contained breathing apparatus which has a portable supply of compressed air and is independent of the ambient atmosphere. The exhaled air passes without recalculation to the ambient atmosphere.

3.7 Fresh Air Hose and Compressed Airline Breathing Apparatus — Respiratory protective device in which breathable air is obtained through an air supply hose either assisted or unassisted.

3.8 Eye Protector — An Eye Protector provided protection for eyes against hazards such as flying particles and fragments, splashing materials and molten metals harmful dust, gases or vapours, aerosols, and radiations which are likely to impair or damage the eyes.

3.9 Glove — A covering for the hand having separate fingers and thumb with cuff length not greater than 63.5 mm.

3.10 Apron — Protective garment worn over clothing that covers the front part of the body from the chest to the waist. Its primary function is to protect clothing from getting dirty or stained while performing tasks or handling substances like dirt or grease

4 SELECTION

4.1 Workers handling waste should have proper PPE, training on how to use it, and facilities for handwashing. Workers should wash hands with soap and water immediately after removing PPE. The PPE requirements may vary based on assessment of the facility and specific job duties of workers handling human waste or sewage, but they generally include the following:

4.2 Eye Protector to protect eyes from splashes of waste material or sewage as specified in Table 1.

Table 1 Eye Protection

(Clause 4.2)

Sl No.	Different Types of Waste	Eye Protection	Relevant Indian Standard
(1)	(2)	(3)	(4)
i)	Municipal solid waste	Safety goggles	IS 8521 (Part 1)
ii)	Municipal liquid waste	Face shield/Full face piece	IS 8521 (Part 1) and IS 14166
iii)	Municipal sewage waste	Safety goggles	IS 8521 (Part 1)
iv)	Fumigation	Safety goggles	IS 8521 (Part 1)
v)	Biodegradable waste	Safety goggles	IS 8521 (Part 1)
vi)	Chemical waste	Safety goggles	IS 8521 (Part 1)
vii)	Biomedical waste	Safety goggles	IS 8521 (Part 1)
viii)	Construction waste	Safety goggles	IS 8521 (Part 1)
ix)	Domestic waste	Safety goggles	IS 8521 (Part 1)
x)	e-Waste	Safety goggles	IS 8521 (Part 1)
xi)	Food waste	Safety goggles	IS 8521 (Part 1)
xii)	Gaseous waste	Safety goggles	IS 8521 (Part 1)
xiii)	Hazardous/Toxic waste	Full face piece/hood	IS 8521 (Part 1) and IS 14166

4.3 Respiratory protective device Specified in Table 2 to protect nose and mouth from splashes waste or sewage.

Table 2 Respiratory Protection

(Clause 4.3)

Sl No.	Different Types of Waste	Respiratory Protection	Relevant Indian Standard
(1)	(2)	(3)	(4)
i)	Municipal solid waste	Filtering face piece FFP1/FFP2/FFP3	IS 9473
ii)	Municipal liquid waste	Half face/Full face masks with appropriate cartridge	IS 14746, IS 14166, IS 15323 and IS 15322
iii)	Municipal sewage waste	PAPR (Powered Air-Purifying Respirators) & SAR (Supplied-Air Respirators) /SCBA(Self-Contained Breathing Apparatus)	IS 10245 (Part 2) and IS 10245 (Part 3)
iv)	Fumigation	Filtering face piece FFP1/P2/P3 Respirator with OV relief	IS 9473, IS 14746, IS 14166, IS 15323 and IS 15322
v)	Biodegradable waste	Filtering face piece FFP1/FFP2/FFP3	IS 9473
vi)	Chemical waste	Half face/Full face masks with appropriate cartridge/SAR	IS 14746, IS 14166, IS 15323 & IS 15322, IS 10245 (Part 2) and IS 10245 (Part 3)

vii)	Biomedical waste	Half face/Full face masks with appropriate cartridge	IS 14746, IS 14166, IS 15323 & IS 15322, IS 10245 (Part 2) and IS 10245 (Part 3)
viii)	Construction waste	Filtering face piece FFP1/FFP2/FFP3	IS 9473
ix)	Domestic waste	Filtering face piece FFP1/FFP2/FFP3	IS 9473
x)	e-Waste	Filtering face piece FFP1/FFP2/FFP3	IS 9473
xi)	Food waste	Filtering face piece FFP1/FFP2/FFP3with OV relief	IS 9473
xii)	Gaseous waste	Half face/Full face masks with appropriate cartridge/ SAR (Supplied-Air Respirators) /SCBA(Self-Contained Breathing Apparatus)	IS 14746 ,IS 14166, IS 15323, IS 15322, IS 10245 (Part 2) and IS 10245 (Part 3)
xiii)	Hazardous/Toxic waste	Half face/Full face masks with appropriate cartridge/ SAR (Supplied-Air Respirators) /SCBA(Self-Contained Breathing Apparatus)	IS 14746 ,IS 14166, IS 15323, IS 15322, IS 10245 (Part 2) and IS 10245 (Part 3)

4.4 Gloves as specified in Table 3 to prevent exposure of hands to waste or sewage.

Table 3 Hand Protection

(Clause 4.4)

SI No.	Different Types of Waste	Hand Protection	Relevant Indian Standard
(1)	(2)	(3)	(4)
i)	Municipal solid waste	Cut resistant gloves/leather hand gloves	IS 6994 (Part 1)
ii)	Municipal liquid waste	Chemical protective gloves	IS 6994 (Part 1)
iii)	Municipal sewage waste	Chemical protective gloves	IS 6994 (Part 1)
iv)	Fumigation	Chemical protective gloves	IS 6994 (Part 1)
v)	Biodegradable waste	Chemical protective gloves	IS 6994 (Part 1)
vi)	Chemical waste	Chemical protective gloves	IS 6994 (Part 1)
vii)	Biomedical waste	Surgical gloves	IS 6994 (Part 1)
viii)	Construction waste	Cut resistant gloves/leather hand gloves	IS 6994 (Part 1)
ix)	Domestic waste	Chemical protective gloves	IS 6994 (Part 1)
x)	e-Waste	Cut resistant gloves/leather hand gloves	IS 6994 (Part 1)
xi)	Food waste	Chemical protective gloves	IS 6994 (Part 1)
xii)	Gaseous waste	Cryogenic/heat resistant gloves	IS 6994 (Part 1)
xiii)	Hazardous/Toxic waste	Cryogenic/heat resistant gloves	IS 6994 (Part 1)

4.5 Body protection as specified in Table 4 for liquid-repellent coveralls to keep human waste or sewage off clothing.

Table 4 Body Protection

(Clause 4.5)

Sl No.	Different Types of Waste	Body Protection	Relevant Indian Standard
(1)	(2)	(3)	(4)
i)	Municipal solid waste	Protective leather clothing	IS 6153
ii)	Municipal liquid waste	Aprons and suits , rubberized, acid and alkali resistant	IS 4501
iii)	Municipal sewage waste	Protective suits , rubberized, acid and alkali resistant	IS 4501
iv)	Fumigation	CBRN (Chemical, Biological, Radiological and Nuclear) Suit	As per India Military standard
v)	Biodegradable waste	CBRN (Chemical, Biological, Radiological and Nuclear) Suit	As per India Military standard
vi)	Chemical waste	CBRN (Chemical, Biological, Radiological and Nuclear) Suit	As per India Military standard
vii)	Biomedical waste	CBRN (Chemical, Biological, Radiological and Nuclear) Suit	As per India Military standard
viii)	Construction waste	Protective leather clothing	IS 6153
ix)	Domestic waste	Aprons and suits , rubberized, acid and alkali resistant	IS 4501
x)	e-Waste	Aprons and suits , rubberized, acid and alkali resistant	IS 4501
xi)	Food waste	Aprons and suits , rubberized, acid and alkali resistant	IS 4501
xii)	Gaseous waste	CBRN (Chemical, Biological, Radiological and Nuclear) Suit	As per India Military standard
xiii)	Hazardous/Toxic waste	CBRN (Chemical, Biological, Radiological and Nuclear) Suit /X-ray lead rubber protective aprons and Suits	As per India Military standard

4.6 Foot protection as specified in Table 5 for rubber boots to prevent exposure to human waste or sewage.

Table 5 Foot Protection

(Clause 4.6)

Sl No.	Different Types of Waste	Foot Protection	Relevant Indian Standard
(1)	(2)	(3)	(4)
i)	Municipal solid waste	Safety shoes	IS 10667
ii)	Municipal liquid waste	Safety shoes liquid resistant	IS 10667
iii)	Municipal sewage waste	Safety shoes liquid resistant	IS 10667

iv)	Fumigation	Safety shoes liquid resistant	IS 10667
v)	Biodegradable waste	Safety shoes	IS 10667
vi)	Chemical waste	Chemical protection shoe	IS 10667
vii)	Biomedical waste	Chemical protection shoe	IS 10667
viii)	Construction waste	Safety shoes	IS 10667
ix)	Domestic waste	Safety shoes	IS 10667
x)	e-Waste	Safety shoes	IS 10667
xi)	Food waste	Safety shoes	IS 10667
xii)	Gaseous waste	Safety shoes impermeable to gas	IS 10667
xiii)	Hazardous/Toxic waste	CBRN (Chemical, Biological, Radiological and Nuclear) shoe	IS 10667

ANNEX A

(Clause 2)

LIST OF REFERRED INDIAN STANDARDS

<i>IS No.</i>	<i>Title</i>
IS 4501 : 1981	Specification for aprons, rubberized, acid and alkali resistant (<i>first revision</i>)
IS 6153 : 1971	Specification for protective leather clothing
IS 6994 (Part 1) : 2021/ISO 374-1 : 2016	Protection of arms and hands: Part 1 Protective gloves against dangerous chemicals and micro-organisms — Terminology and performance requirements for chemical risks (<i>first revision</i>)
IS 8521 (Part 1) : 2022/ISO 16321-1 : 2021	Eye and face protection for occupational use: Part 1 General requirements (<i>first revision</i>)
IS 9473 : 2002	Respiratory protective devices — Filtering half masks to protect against particles — Specification (<i>first revision</i>)
IS 10245 (Part 2) : 2023	Respiratory protective devices — Specification: Part 2 Self-contained open circuit breathing apparatus (<i>second revision</i>)
IS 10245 (Part 3) : 20XX/Doc: CHD 08 (23661)	Respiratory protective devices: Part 3 Fresh air hose and compressed air line breathing apparatus (<i>under development</i>)
IS 10667 : 20XX/Doc: CHD 08 (25067)	Guide for selection of industrial safety equipment for protection of foot and leg (<i>under development</i>)
IS 14166 : 2024	Respiratory protective devices — Full face masks — Specification (<i>first revision</i>)
IS 14746 : 20XX/Doc: CHD 08 (19050)	Respiratory protective devices - Half masks and quarter masks — specification (<i>under development</i>)
IS 15322 : 2003	Particle filters used in respiratory protective equipment — Specification
IS 15323 : 2003	Gas filters and combined filters used in respiratory protective equipment – Specification