भारतीय मानक

Indian Standard

IS 18520 : 2024

ठोस अपशिष्ट प्रबंधन — पृथक्करण, संग्रह और वाणिज्यिक सुविधाओं (दुकानें, बाजार, मॉल आदि) पर उपयोग — दिशानिर्देश

Solid Waste Management — Segregation, Collection and Utilization at Commercial Facilities (Shops, Markets, Malls etc) — Guidelines

ICS 13.030.10

भारतीय मानक ब्यूरो
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February 2024 **Price Group 6**

Solid Waste Management Sectional Committee, CHD 33

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Solid Waste Management Sectional Committee had been approved by the Chemical Division Council.

Solid waste management is an obligatory function of civic local bodies/municipalities in India as per the *Solid Waste Management Rules*, 2016. In rural India, it is the responsibility of gram panchayats/similar bodies as recognized and approved by the Government (Union/State/UT). However, performance of this task is far from satisfactory in most of the parts of the country. This results in problems of health, sanitation and environmental degradation. With rapid growth in population, the situation is becoming more and more critical with the passage of time.

It is, therefore, essential that each individual of common public and all functionaries in the civic bodies engaged in handling of solid waste, must have a clear understanding of their duties in their respective domains. This will help to achieve the goal of reuse and recycle with the ultimate objective of zero disposal to landfill.

The composition of Committee responsible for formulation of this standard is given in Annex C.

This standard describes methodologies for handling of different types of waste generated at commercial facilities including shops, markets, malls etc. This standard is intended to be used as one of the tools for management of solid waste operations for implementing the relevant solid waste rules.

Indian Standard

SOLID WASTE MANAGEMENT — SEGREGATION, COLLECTION AND UTILIZATION AT COMMERCIAL FACILITIES (SHOPS, MARKETS, MALLS ETC) — GUIDELINES

1 SCOPE

This standard prescribes guidelines for segregation, collection and processing of solid waste (SW) generated at commercial facilities including shops, markets, malls etc.

Elements namely, collection from the facility, transportation by primary vehicles to transfer station and further transport by secondary vehicles to transport for processing and recycling and final scientific disposal of reject material' are excluded from this standard.

NOTE — General guidelines are also provided for collection and handling of E-waste, bio-medical waste, commercial hazardous waste, garden waste, construction and demolition waste generated from commercial facilities.

2 REFERENCE

The standard given below contains provisions, which through reference in this text, constitute provisions of this standard. At the time of publication, the edition indicated was 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 edition of this standard:

IS No.		*Title*
IS 9569 : 2022	:	Solid waste mangement — Glossary (*first revision*)

3 TERMINOLOGY

For the purpose of this standard the definitions of the terms, symbols and units given in IS 9569 and the following shall apply.

3.1 Aerobic Composting — A controlled process involving microbial decomposition of organic matter in the presence of oxygen.

3.2 Bio-Degradable Waste — It means any organic material that can be degraded by micro-organisms into simpler stable compounds, it includes food and dairy product waste as well as horticulture waste.

3.3 Bio-Medical Waste (Including Domestic Sanitary Waste) — A part of dry waste generated during the medication/treatment including sanitary napkins, diapers, contaminated gauge etc including expired medical items.

NOTE — For reference to indicative list of bio-medical waste (*see* Annex A).

3.4 Commercial E-Waste — A part of dry waste comprising of electrical and electronic equipment whole or in parts or rejects which are intended to be discarded by commercial establishment.

3.5 Commercial Establishment — Local shopping centers, malls, market areas, office and institutional complexes.

3.6 Compost — A controlled process involving microbial decomposition of organic waste resulting in nutrient rich natural fertilizing/soil conditioning matter.

3.7 Disposal — The final and safe disposal of post processed commercial solid waste and inert street sweepings and silt from surface drains on land to prevent contamination of ground water, surface water, ambient air and attraction of animals or birds.

3.8 Domestic Hazardous Waste — It includes discarded paint drums, pesticide cans, CFL bulbs, tube lights, expired medicines, broken mercury thermometers, used batteries, used needles and syringes and contaminated gauge, etc, generated at the household level.

3.9 Door to Door Collection — Collection of segregated solid waste from the door step of households, shops, commercial establishments, offices, institutional or any other non-residential premises and includes collection of such waste from entry gate or a designated location on the ground floor in a housing society, multi storied building or apartments, large residential, commercial or institutional complex or premises.

3.10 Dry Waste — Waste other than bio-degradable waste, inert street sweepings, including recyclable and non-recyclable waste, combustible

waste, sanitary napkin, diapers, construction and demolition waste, E-waste etc.

3.11 Hazardous Waste — Discarded paint drums, pesticide cans, CFL bulbs, tube lights, expired medicines, broken mercury thermometers, used batteries, used needles and syringes and, etc, generated at the commercial level.

NOTE — For reference to indicative list of hazardous waste (*see* Annex A).

3.12 Processing — Any scientific process by which segregated solid waste is handled for the purpose of reuse, recycling or transformation into new products or recovery of material or energy.

3.13 Segregation — Sorting and separate storage of various components of solid waste namely biodegradable, non-biodegradable wastes including recyclable waste, non-recyclable combustible waste, bio medical waste sanitary waste and non-recyclable inert waste, hazardous wastes generated at commercial facilities and construction and demolition wastes at these facilities.

3.14 Solid Waste — Means and includes solid or semisolid waste from commercial facilities including sanitary waste, commercial waste, institutional waste, office waste, packaging waste, E-waste, battery , catering, market waste and other non- residential wastes, facility sweepings, silt removed or collected from the surface adjacent drains, horticulture waste, vegetable waste, fish, poultry products waste and dairy products waste, treated bio-medical waste excluding industrial waste, bio-medical waste and radioactive waste generated in the area under the local authorities and other entities mentioned in *Solid Waste Rules*.

3.15 Storage — Means to store segregated waste at commercial facilities separately at a designated place.

3.16 Transportation — Conveyance of segregated solid waste, either treated, partly treated or untreated from a location to another location in an environmentally sound manner through specially designed and covered transport system so as to prevent the foul odour, littering, mixing and unsightly conditions.

3.17 Waste Picker/Waste Collector — A person or group of persons informally engaged or formally recognized by local bodies in collection and recovery of reusable and recyclable solid waste from the source of waste generation, the streets, bins, material recovery facilities (MRF), processing and waste disposal facilities for sale to recyclers directly or through intermediaries to earn their livelihood.

4 ELEMENTS OF SOLID WASTE MANAGEMENT

4.1 Waste Generation

The quantity and quality of solid waste generated from commercial facilities vary from place to place. However, different types of solid waste (SW) have commonality in that these sources generate dry waste, bio-degradable waste, commercial, E-waste, hazardous waste, bio-medical waste, construction and demolition waste.

4.2 Waste Segregation at Source

Segregation at source can be divided into three categories - wet waste (for example, vegetable peels, kitchen waste etc), dry waste (paper, plastic bags etc) and domestic hazardous waste (for example, pesticide cans, CFL bulbs, tube lights etc) in keeping with *Solid Waste Management Rules*, 2016. If the local authorities have additional by laws, these needs to be adhered upon.

4.3 Storage of Segregated Solid Waste at Source

4.3.1 *General*

Separate storage of segregated solid waste at the source of waste generation is the first essential step towards solid waste management. Solid wastes namely dry waste, bio-degradable waste, non-industrial E-waste, non- industrial hazardous waste, non-industrial bio-medical waste, construction and demolition waste should be stored as described in **4.3.2** to **4.3.6**.

4.3.2 *Storage of Dry Waste*

All dry waste shall be stored in the designated bins/bags. Care shall be taken to keep/make the dry waste materials free from contamination/soiling with biodegradable waste or hazardous waste.

NOTE — It is recommended that plastic based packaging materials for milk, food, etc, should be rinsed/washed thoroughly to remove extraneous material (preferably dried) before storing it in the dry waste bin.

4.3.3 *Storage of Bio-Degradable Waste*

All bio-degradable waste shall be stored in separate bins and shall be transferred to the facility or community waste collection bin or van, as the case may be, on daily basis. In larger size Malls having a greater number of restaurants/eateries, should maintain its own air-conditioned storage facilities, where the bio-degradable waste can be stored prior to handing over to the transportation system for transferring to the processing/next stage of

operation. Bio-degradable waste shall never be disposed of in plastic bags. In case a plastic inner liner is used for keeping the waste bin/operation clean, the plastic liner shall not be thrown along with bio-degradable waste. The plastic liner can be re-used after cleaning or washing. When discarded, the plastic liner shall be stored in the dry waste bin after cleaning. It is mandatory under Solid Waste Management Rules, 2016 that bulk generators (waste generators generating more than 100 kg of waste/day all waste streams put together) should have their own processing/semi-processing units to handle and process the bio-degradable wet waste at source. Smaller facilities may keep the packed wet waste and use suitable odour neutralization (if required) and handover to the waste collector or authorized vendor as per arrangement made by local authorities. The collection of such waste should be done minimum once in 24 hours to prevent air quality deterioration till its further transfer.

For emptying out the bio-degradable waste content of the larger size liners in to the final transport which is going to the processing side/landfill site, a mechanical device should be used for ease of operation. In any eventuality, bio-degradable waste shall never be disposed off along with the plastic liner.

4.3.4 *Storage of Domestic Bio-Medical Waste* (*Including Sanitary Waste*)

Sanitary waste like diapers, sanitary pads etc, shall be wrapped in the pouches provided by the manufacturers or brand owners of these products or in a suitable wrapping material as instructed by the local authorities and shall be placed in a separate bin for next operation.

4.3.5 *Storage of Hazardous Waste*

Non-industrial–hazardous waste shall be stored separately for periodic collection ensuring that ‘broken glass articles’ ‘needles’, ‘razors’, ‘used shaving cartridges and other sharp objects are kept in a puncture-proof container so that no person is injured or suffers any kind of injury at the time of periodic collection of such wastes. Occupants are encouraged to store their old battery cells and hazardous waste separately in a bag to be handed over to waste pickers/collectors on regular interval as prescribed by local body. A separate bin shall be provided at the commercial premises to facilitate transfer of hazardous waste from the source. An indicative list of hazardous waste is given at Annex A.

4.3.6 *Storage of Non-Industrial E-Waste*

Non-industrial E-waste shall be stored separately to hand over periodically to the waste picker or shall be transferred directly to the designated bin at local authority level for further transfer to the processing/recycling facility.

4.4 Collection and Transportation of Segregated Waste from Source

4.4.1 *General*

Bio-degradable waste shall be collected from the storage points every day because of its putrescible nature. Dry waste may be collected at longer regular intervals at the convenience of the waste generator and the waste picker, as this waste does not normally decay and need not be collected daily. Non-industrial hazardous waste and E-waste are collected from the storage points on daily basis or on fixed intervals depending on the volume of such waste generation and the convenience of the waste generator. Non-hospital bio-medical waste shall be handed over separately to the daily waste picker for further disposal as designated by the regulatory authorities. Commercial facilities shall be advised or directed to put such waste in special bins kept at the storage level for further treatment and disposal as designated by the regulatory authorities. Please refer Annex B of IS 16557 for behavioral aspects and awareness of public for effective management of solid waste.

Bio-degradable waste, dry waste, non-industrial hazardous waste, non-industrial E-waste, non-hospital bio-medical waste, construction and demolition waste and horticulture waste shall be collected separately in such a way that these wastes do not get mixed together during the collection and the subsequent transportation and unloading operation.

4.4.2 *Bio-Degradable Waste*

Bio-degradable waste shall be collected from the storage points by staffs of civic authorities or authorized persons appointed by contractors engaged by civic authorities on daily basis under the supervision of civic bodies. Such collection shall be at pre-informed timings from all the storage points including shops, markets, malls etc. Handcarts, containerized tricycles, motorized vehicles or any other vehicle suitable for collection of segregated waste without necessitating deposition of waste on the ground and multiple handling of waste should be used by the waste

pickers. Bio-degradable waste collected from the storage points shall be directly transported to the processing or disposal facility. Vehicles used for transportation of wastes shall be covered and shall have a facility to preferably compacted and also prevent waste spillage and leachate dropping from the vehicles on the ground en-route to the processing or disposal facility. Waste shall not be visible to public, nor exposed to open environment for preventing their scattering.

4.4.3 *Dry Waste*

Dry waste collected and stored at shops, markets and malls etc shall be first transferred from dry waste bins/bags to bags of appropriate size to carry the dry waste to the designated segregation areas.

4.4.4 *Hazardous Waste*

Hazardous waste shall be handed over to waste picker in a separate bag/container. An indicative list of non-industrial hazardous waste is given at Annex A.

4.4.5 *Bio-Medical Waste* (*Including Sanitary Waste*)

Non-hospital Bio-medical waste should be handed over to waste picker in separate bag/container. An indicative list of bio-medical waste is given at Annex A.

4.5 Treatment of Segregated Waste

4.5.1 *Utilization of Bio-Degradable Waste at Source*

Commercial facilities like markets, malls, where group of wet waste generators are clustered, shall be motivated to practice various methods such as community composting/bio-methanation etc, listed in Annex B for treatment of bio-degradable waste. In case of treatment of bio-degradable waste at local level, conventional facilities/modern technologies such as composting, biogas plants, bio-methanation facilities or any other suitable technology as provided by urban local bodies/regulatory authorities shall be used. The treatment facilities shall produce consumable products which are environment friendly. The products emerging out of treatment facilities such as compost/gas etc, shall be either utilized at the source of waste generation or shall be handed over/sold as per the procedures prescribed by the regulatory authorities.

4.5.2 *Recovery and Recycling of Dry Waste*

Dry waste shall be segregated in to different categories and sub-categories such as paper, card board, plastics, glass, metals etc, for further recovery and recycling. Dry waste sale proceeds shall preferably belong to the waste pickers to motivate and reward them for collecting and transporting it unmixed with bio-degradable waste.

4.5.3 *Safe Disposal of Non-Industrial Hazardous Waste*

The waste picker shall further dispose hazardous waste as per the instructions/rules of urban local bodies /regulatory authorities.

NOTE — For reference to indicative list of hazardous waste (*see* Annex A).

4.5.4 *Safe Disposal of Domestic Bio-Medical Waste* (*Including Sanitary Waste*)

The waste picker shall further dispose of the domestic biomedical waste as per the instructions/rules of urban local bodies/regulatory authorities.

NOTE — For reference to indicative list of bio-medical waste (*see* Annex A).

5 PROCESS CONTROL REQUIREMENTS

5.1 Segregation of Solid Waste at Commercial Level

5.1.1 *General Requirements*

Solid waste generated at commercial level shall be segregated and stored in the bins/bags specified at **5.1.2**. No solid waste shall be thrown on the streets, footpaths, open spaces, drains or water bodies or burnt openly.

5.1.2 *Requirements for Waste Bins/Bags at Commercial Level*

Dry waste and bio-degradable waste shall be kept separately at the source of waste generation. Colour code for bins/bags shall be as follows:

a) *Green* — for bio-degradable waste;

b) *White* or *Blue* — for dry waste (excluding biomedical waste/hazardous waste); and

c) *Red* — for bio-medical waste and rejects.

All bins shall be covered with lid.

5.1.3 *Segregation of Waste*

Dry waste, bio-degradable waste, hazardous waste, bio-medical waste, etc, shall be separated and stored in the designated bins or bags. Hazardous waste and bio-medical waste such as used batteries, containers for chemical sand pesticides, discarded medicines, etc, if and when generated, shall be kept separate. Sharp edged objects like broken glass, sharp metal parts, etc, shall be kept separate.

6 EQUIPMENT

6.1 Recommended Size/Design/Type of Collection/Storage Bins and Primary Vehicles

6.1.1 Primary storage bins at commercial level should be of appropriate size, easy to handle, preferably of 10 litres to 15 litres capacity.

6.1.2 Collection bins or push-carts should preferably be of 40 litres to 60 litres capacity to permit safe handling and emptying. Bio-degradable waste should be first received at the doorstep in a 20 litres basin to enable pick-out of any plastic sachets, etc, before emptying it into the 60 litres bins for transport.

6.1.3 Compost bins and biogas units may be of any type and size at user convenience.

6.1.4 Equipment for transport of segregated waste should as far as possible be non-motorized to minimize breakdowns and guarantees punctual and regular service as per the requirements laid down by the local authorities. Pushcarts should have a double-bar for pushing to enable bags to be hung between them. Please (*see* Annex D) of IS 16557 for a recommended design.

ANNEX A

(*Clauses* 3.3, 3.11, 4.3.5, 4.4.4, 4.4.5, 4.5.3 *and* 4.5.4)

INDICATIVE LIST OF COMMERCIAL BIO-MEDICAL WASTE (INCLUDING SANITARY WASTE)/COMMERCIAL HAZARDOUS WASTE

A-1 INDICATIVE LIST OF COMMERCIAL BIOMEDICAL WASTE

a) Used feminine hygiene products like disposable sanitary napkins or tampons;

b) Used disposable diapers for infants, senior citizens or invalids;

c) Used sponges, cottons, bandages, tissue papers face masks, gloves, condoms, disposable syringes, urine or blood bags or items soiled with bodily fluids or similar potentially infectious waste;

d) Expired solid or liquid medicines, drugs and cosmetics including chemotherapy agents; and

e) Sharp items like used needles or shaving blades or surgical instruments such as scalpels and lancets, culture dishes and other glassware should be separately stored in puncture-proof jars.

A-2 INDICATIVE LIST OF DOMESTIC HAZARDOUS WASTES

A-2.1 The following list shows commercial items containing potentially hazardous ingredients that might render waste as hazardous.

A-2.1.1 *Cleaning Products*

a) Oven cleaners;
b) Drain cleaners;
c) Wood and metal cleaners and polishes;
d) Toilet cleaners;
e) Tub, tile, shower cleaners;
f) Bleach (laundry); and
g) Pool chemicals.

A-2.1.2 *Indoor Pesticides*

a) Ant sprays and baits;
b) Cockroach sprays and baits;
c) Flea repellents and shampoos;
d) Bug sprays;
e) Plant insecticides;
f) Moth repellents; and
g) Mouse and rat poisons and baits.

A-2.1.3 *Automotive Products*

a) Motor oil;
b) Fuel additives;
c) Carburetor and fuel injection cleaners and filters;
d) Air conditioning refrigerants;
e) Starter fluids;
f) Automotive batteries;
g) Transmission and brake fluid; and
h) Antifreeze.

A-2.1.4 *Workshop/Painting Supplies*

a) Adhesives and glues;
b) Furniture strippers;
c) Oil or enamel based paint;
d) Stains and finishes;
e) Paint thinners and turpentine;
f) Paint strippers and removers;
g) Photographic chemicals; and
h) Fixatives and other solvents.

A-2.1.5 *Lawn and Garden Products*

a) Herbicides;
b) Insecticides; and
c) Fungicides/wood preservatives.

A-2.1.6 *Miscellaneous*

a) Batteries;
b) Mercury thermostats or thermometers;
c) Fluorescent light bulbs/tube lights; and
d) Driveway sealer.

A-2.2 Other Flammable Products

a) Propane tanks and other compressed gas cylinders;
b) Kerosene;
c) Heating oil;
d) Diesel fuel;
e) Gas/oil mix; and
f) Lighter fluid.

ANNEX B

(*Clause* 4.5.1)

INDICATIVE LIST OF VARIOUS TREATMENT METHODS OF BIO-DEGRADABLE WASTE AT COMMERCIAL LEVEL

B-1 INHOUSE COMPOSTING

Commercial places can use the inhouse bio-degradable waste for producing compost. Many designs of inhouse composters are now available for single or multiple places. Composting needs aeration to control odours. This can be done by addition of dry leaves or coco peat to make the waste porous by manual or mechanical turning arrangements. Addition of moisture is rarely needed unless the fresh bio-degradable waste is very dry.

B-1.1 Community composting can be done collectively by group of commercial units. The most cost-effective method is stack composting, where a pipe or wood frame of 1 m to 2 m × 2 m to 3 m is raised off the ground by 200 mm to 300 mm and covered with old baskets or matting to support a base layer of dry leaves. Then bio-degradable waste is spread in one thin layer a day of maximum 150 mm and covered with a layer of dry leaves or older stabilized compost or coco-peat to control odour and flies. Stacks can be built up to a manageable height with 10 to 12 such alternating layers and left to mature for a month or two. Normally no additional watering is needed but sprinkling with a very dilute solution of fresh cow dung helps to speed up decomposition. Composting bio-cultures in liquid or powder form or mixed with coco-peat are also very useful. Check with repeat users of different types to select the most effective ones.

B-1.2 Vermi-composting is also an option for decentralized conversion of bio-degradable waste to useful manure, as per the instructions of the supplier of earthworms.

B-2 BIO-METHANATION

Individual commercial units can use very basic biogas units of one plastic tank inverted within another for biodegradable waste quantities as small as 2 kg to 4 kg a day, producing an hour or two worth of cooking gas. Kitchen wash-water can be used in the process in place of fresh water. For more details on bio-methanation, literature available in books, internet, etc, may be referred.

For a group of commercial units, the facilities can go up to a ton or more of bio-degradable waste a day. Plastic shall not be entered into the units. Also, over-feeding or underfeeding for longtime should be avoidable.

ANNEX C

(*Foreword*)

COMMITTEE COMPOSITION

Solid Waste Management Sectional Committee, CHD 33

Organization	*Representative(s)*
In Personal Capacity (*B-272, Sarita Vihar, New Delhi — 110076*)	DR ANURADHA SHUKLA **(*Chairperson*)**
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Central Pollution Control Board, New Delhi	MS DIVYA SINHA SHRI RITESH PRASAD GURUNG (*Alternate*)
Confederation of Indian Industry, New Delhi	SHRI SANTOSH KUMAR YADAV MS ANJALI (*Alternate*)
CSIR - Central Road Research Institute, New Delhi	DR SIKSHA SWAROOP KAR DR RINA SINGH (*Alternate*)
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Member Secretary
SHRI MATCHA ARUN KUMAR
SCIENTIST 'B'/ASSISTANT DIRECTOR
(CHEMICAL), BIS

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