भारतीय मानक

Indian Standard

IS 7049 : 2023

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(पहला पुनरीक्षण)

Handling, Processing, Quality Evaluation and Storage of Poultry — Code of Practice

(First Revision)

ICS 67.120.20

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November 2023 **Price Group 5**

Slaughter house and Meat Industry Sectional Committee, FAD 18

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Slaughter house and Meat Industry Sectional Committee had been approved by the Food and Agriculture Division Council.

With the installation of several poultry dressing plants in the country where a sizeable number of birds are handled and processed daily, it was necessary to have a comprehensive code on scientific handling, processing, quality evaluation and storage of poultry for providing wholesome dressed poultry for human consumption. Besides, availability of a national code will enable the authorities in exercising due control on wastage of various valuable poultry products, many a time lost due to faulty handling and for systematic ante-mortem and post-mortem inspection of poultry.

This standard was originally published in 1973. In this revision, the following changes have been incorporated keeping in view the latest technological advancements and industrial practices:

a) Definition of broiler or fryer has been updated;
b) Handling and processing parameters with respect to stunning and scalding process have been updated to ensure better control of the processes; and
c) Storage conditions parameters have been modified considering the impact on quality.

Apart from the above, the standard has been brought out in the latest style and format of the Indian Standards. Also, amendment 1 and 2 to the standard have been suitably incorporated.

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

For the purpose of deciding whether a particular requirement of this standard is compiled with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value shall be the same as that of the specified value in this standard.

Indian Standard

HANDLING, PROCESSING, QUALITY EVALUATION AND STORAGE OF POULTRY — CODE OF PRACTICE

(First Revision)

1 SCOPE

This code lays down guidelines for efficient handling, processing, quality evaluation and cold storage of poultry.

2 REFERENCES

The standards given below 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 of these standards:

IS No.	*Title*
IS 2491 : 2013	Food hygiene — General principles — Code of practice (*third revision*)
IS 5238 : 2001	Transport of poultry — Code of practice (*second revision*)
IS 6273	Guide for sensory evaluation of foods:
(Part 1) : 1971	Optimum requirements
(Part 2) : 1971	Methods and evaluation cards
IS 6559 : 2023	Code of practice for ante-mortem and post-mortem inspection of poultry (*first revision*)
IS 10500 : 2012	Drinking water — Specification (*second revision*)

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 6559 and in addition the following definitions shall apply.

3.1 Broiler or Fryer — A broiler or fryer is a young chicken (usually 4 to 6 weeks of age) of either sex, that is, tender-meated with soft pliable, smooth-textured skin and flexible breastbone cartilage.

3.2 Hen or Stewing Chicken or Fowl — A hen or stewing chicken or fowl is a mature female chicken (usually more than 10 months of age) with meat less tender than that of a roaster, and nonflexible breastbone tip.

3.3 Culled Poultry — Unproductive poultry which are sent for slaughter.

4 TRANSPORT OF POULTRY

4.1 Poultry of various species are usually transported from the farms to the poultry processing plants in cages, coops and crates. In some instances, specially built trucks are used. Care shall be taken in collecting and loading the live poultry at the farm and in unloading at the poultry processing plant so that the poultry shall not be bruised or injured.

4.2 Special attention shall be directed to the humane transport of live poultry to prevent overcrowding and suffocation, exposure to extremes of temperature and transport over long distances without feed and water (*see* IS 5238). The cages, coops, crates and vehicles should be disinfected before leaving the poultry processing plant, in order to reduce the possibility of the spread of poultry diseases.

5 DRESSING PLANT AND FACILITIES

5.1 The slaughter, evisceration and packing of poultry should be conducted in such a manner that will result in hygienic processing, proper inspection and preservation for the production of clean and wholesome poultry and poultry products.

5.2 Separate rooms should be provided for the following operations:

a) Live poultry receiving and holding. Facilities should be provided for washing and disinfection of coops. There should also be facility for watering of birds at the holding area if birds are to be retained for 8 h or more;
b) Slaughter and bleeding;
c) Feather removal;
d) Evisceration, chilling and packing. Adequate facility for the prompt removal of body heat of slaughtered poultry should be provided; and
e) Inedible products room for the storage of feathers and inedible waste products and

concerned poultry carcasses, prior to transport to rendering plant for the preparation of inedible fats and animal food.

5.3 Water Supply

Particular attention should be paid to water supply to the poultry dressing plant. The quality of water used should satisfy the requirements for potable drinking water (*see* IS 10500).

5.4 Ventilation

Particular attention should also be given to ventilation. Illumination should be sufficiently strong, properly situated and should not cause glare.

5.5 Personnel Hygiene

Personnel shall wear special working clothes including head gear washable material, and the personnel shall be guided so that each individual carries out his/her particular work as correctly effectively and hygienically as possible. In this connection, the veterinarian shall explain the necessity of frequent hand washing and disinfection during work and specially after visiting the toilet. Omission of such principles in the processing of the poultry can result in transmission of infection from bird to bird and from human being to slaughtered poultry (*see* IS 2491).

5.6 There shall be satisfactory disposal of sewage.

6 ANTE-MORTEM AND POST-MORTEM INSPECTION OF POULTRY

The poultry shall be subjected to an ante-mortem and post-mortem inspection according to the procedure laid down in IS 6559.

7 HANDLING AND PROCESSING

7.1 Stunning

The poultry should be stunned either through mechanical/electrical/gas. Stunning efficiency is to be ensured in such a way that the recovery time of bird is maintained within 150 s.

7.2 Bleeding

The birds should be bled by giving a cut on the jugular vein below the earlobe and slide along the line while being bled-out, towards the scald bath. In small processing plants, the operation may be done manually. The bleeding time should preferably be not less than 90 s to ensure proper bleeding.

7.3 Scalding

7.3.1 Scalding shall be done after all movements (reflexes) have ceased. The temperature of the scald water shall be maintained at about 53 °C to 58 °C, and the poultry should be kept in it for about 2 min to 4 min.

7.3.2 Care should be taken to maintain a bacterial count less than 10 000 per ml in this water, unless the scald vessel is supplied with a suitable overflow.

7.3.3 The scald container shall be thoroughly cleaned daily.

7.3.4 The scald water shall be changed periodically during slaughter.

7.4 Plucking

Immediately after scalding, the plucking of poultry should be done by machine, followed by a brief manual fine-plucking.

7.5 Removal or Feet

From hygiene point of view, removal of the feet at the tarsometatarsal joint shall be done at this stage, as this would make it possible to avoid dirt and dirty water from the feet and legs running down the body, after opening the abdominal cavity.

7.6 Evisceration and Chilling

First the oil gland shall be removed. The abdominal cavity should then be opened by means of a transverse cut. A circular cut should be made around the vent so that the intestines and organs call be removed. This procedure shall be followed very carefully, without any damage to the intestine by cuts or tearing.

NOTE — It has been estimated that 1 g of faecal matter contains more than 2.5×10^9 bacteria and there is enormous contamination which can take place in the abdominal cavity, the thoracic cavity and on the surface of the bird. Furthermore, as poultry is the most significant reservoir for *Salmonella*, it is important to remove the contaminated birds and proper veterinary control holds back such contaminated birds for washing and cleaning out, before the poultry can be allowed to continue for further processing.

7.7 At this point of the slaughter line the veterinary evaluation of the poultry as discussed in IS 6559 shall be made.

7.8 After the inspection has been carried out, the poultry shall be given a washing with water. The intestines and the organs shall be removed, washed and collected. The gizzard and the head shall be removed. The poultry shall then be once more sprayed with water after which the lungs and the kidneys shall be removed by vacuum or manually by

means of a suitably constructed fork. The poultry should be given a further spray with water after the removal of lungs and kidneys to ensure that the bird entering the spin-chiller is as clean as possible.

The bird thus processed shall then be cooled in running water containing 2 ppm to 5 ppm chlorine in a spin-chiller or in other types of chillers.

NOTES

1 Although the bird has been sprayed, its inner and outer surfaces are heavily contaminated. In spin-chiller with water at a temperature of 5 °C to 7 °C most of the bacterial flora will stop growing and the number of bacteria on the surfaces of the body will be decimated by the continuous movement in water and by the addition of fresh water. The amount of water which is necessary for cooling is about 6 litres per bird.

2 Poultry flesh contains little or no bacteria. The most important contamination comes from outside, that is, from air, water, food and faecal matter during its passage along the slaughter line; and also by means of knives, hands, clothes, and equipment. Some of those bacteria which are found on the poultry skin are *Pseudomonas*, *Achromobacter*, *Flavobacteria*, *Micrococci*, *Coliform alcaligenes*, *Proteus* and *Bacillus*. As the growth of these bacteria causes putrefaction of the poultry, first on the free surfaces and thereafter in the flesh itself, it is necessary to stop their growth as rapidly as possible and keep the poultry cooled. Lowering the temperature reduces the rate of bacterial growth considerably.

7.9 Draining

After evisceration and cleaning, the birds shall be drained for 5 min to 10 min since an undrained dripping bird when packed and frozen tends to be coated diffusely with irregularly formed ice layers which mar the uniformity in appearance of the carcass.

8 GRADING

8.1 The poultry shall be graded on the basis of the characteristics given in **8.1.1** to **8.1.4**.

8.1.1 Dressed mass (with and without giblet and neck).

8.1.2 Dressing percentage =

$$\frac{\text{Dressed mass after washing}}{\text{Live mass}} \times 100$$

8.1.3 Degree of fleshing (to be determined by using breast angle-meter).

8.1.4 Keel bone length (to be determined with the help of Vernier calipers).

9 QUALITY EVALUATION

The 10 weeks old birds shall be steam-cooked at 0.70 kg/cm^2 to 1.05 kg/cm^2 pressure for 15 min to 10 min respectively, the processed birds shall be evaluated for quality as per the evaluation card given in Annex A. The details of the panel selection procedure for conducting the test, etc, shall be as laid down in IS 6273 (Part 1) and IS 6273 (Part 2).

10 PACKING

10.1 Before packing, the gizzard rid of the internal contents and mucosal layer, the heart after removal of pericardium, the liver and the neck should be placed into the abdominal cavity of the carcass enclosed in a plastic bag. Dress the carcass by folding back the wings and introducing the legs through the abdominal opening out through the vent opening.

10.2 The drained and dressed birds shall be packed into suitable sized polythene bags (200 micron thickness) or other suitable packing material. Before final sealing, the packs shall be immersed into vats containing water to expel the content of air between the carcass and the bag, taking care that no water is introduced in the pack. Alternatively, vacuum wrapping or shrink wrapping of the packs may be adopted. After the air inside is expelled, the bag shall be sealed in a sealer or shall be knotted using rubber bands.

11 STORAGE

11.1 The bulk quantities of processed poultry may be stored either under refrigeration, or frozen.

11.1.1 The poultry should be stored under refrigeration at 0 °C to 4 °C. The period of storage under refrigeration shall not exceed 10 days depending on the type of packaging.

11.1.2 The poultry may be frozen at - 30 °C to - 40 °C, and may be stored at - 18 °C, up to 9 months.

ANNEX A

(*Clauses* 9)

EVALUATION CARD FOR NUMERICAL SCORING FOR OVERALL QUALITY AND ACCEPTANCE OF DRESSED POULTRY

Name_____ **Date_____**

Product_____ **Time_____**

A-1 OVERALL QUALITY

Please rate these samples for overall quality according to the following grade description and scoring:

Quality Grade Description	***Score***
Excellent	9 to 10
Good	6 to 8
Fair	4 to 5
Poor	1 to 3

Code No.	*Colour*	*Texture*	*Taste*	*Odour*	*Overall Quality*
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

A-2 ACCEPTANCE SCORE SHEET

	Points
Like very much	7
Like moderately	6
Like slightly	5
Neither like nor dislike	4
Dislike slightly	3
Dislike moderately	2
Dislike very much	1

Please encircle the point at which you rate the quality (use reverse side for additional remarks).

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

Slaughter House and Meat Industry Sectional Committee, FAD 18

Organization	*Representative(s)*
National Research Center on Meat, Hyderabad	DR S. B. BARBUDDHE (***Chairperson***)
Agricultural & Processed Food Products Export Development Authority (APEDA), New Delhi	SHRI UMESH KUMAR MS SAMIDHA GUPTA (*Alternate*)
All India Meat and Livestock Exporters Association, Mumbai	DR N. KONDAIAH
Animal Welfare Board of India, Balabhgarh	DR SUJIT KUMAR DUTTA SHRIMATI PRACHI JAIN (*Alternate*)
AOV Exports Private Limited, Noida	SHRI AJAY TANDON
Association of Meat Scientists and Technologists (AMST), Chennai	DR V. APPA RAO
Confederation of Indian Food & Trade Industry & Industry, New Delhi	SHRI KANNAN B. MS VARSHA YADAV (*Alternate*)
CSIR - Central Food Technological Research Institute, Mysuru	DR TANAJI KUDRE
CSIR - Central Leather Research Institute, Chennai	DR T. S. UMA
CSIR - National Environmental Engineering Research Institute (NEERI), Nagpur	DR GIRISH POPHALI
Deonar Slaughterhouse, Mumbai	DR YOGESH JAYPRAKASH SHETYE DR KALIMPASHA AHMEDKHAN PATHAN (*Alternate*)
Export Inspection Council of India, New Delhi	DR S. K. SAXENA DR AMIT SHARMA (*Alternate*)
Food Safety and Standards Authority of India, New Delhi	DR FIRDAUS JAHAN
Indian Meat Science Association, Hyderabad	DR GIRISH PATIL S. DR RAJEEV RANJAN SINGH (*Alternate*)
Indian Poultry Science Association, Izatnagar	DR JAYDEEP ROKADE
Indian Stainless Steel Development Association (ISSDA), Gurugram	SHRI ROHIT KUMAR SHRI RAJEEV GUPTA (*Alternate*)
Indian Veterinary Research Institute, Izatnagar	DR A. R. SEN DR SUMAN TALUKDER (*Alternate*)
Jindal Stainless Steel, Gurugram	SHRI NIMISH GOYAL MS NISHA GOYAL (*Alternate*)

Organization	*Representative(s)*
Kerala Veterinary and Animal Sciences University, Thrissur	DR SUNIL B. DR VASUDEVAN V. N. (*Alternate*)
Ministry of Food Processing Industries, New Delhi	DR G. SRINIVASAN
Municipal Corporation of Delhi, New Delhi	DR V. K. SINGH DR AKHILESH KAMAL (*Alternate*)
National Research Center on Meat, Hyderabad	DR M. MUTHUKUMAR
National Research Centre for Pig, Guwahati	DR R. THOMAS
People for Ethical Treatment of Animals, Mumbai	DR KIRAN AHUJA DR BANDHANPREET KAUR (*Alternate*)
Rajiv Gandhi Institute of Veterinary Education and Research (RIVER), Puducherry	DR P. K. MANDAL DR V. J. AJAY (*Alternate*)
Tamil Nadu Vet & Animal Sciences University, Chennai	DR R. NARENDRA BABU DR S. EZHILVELAN (*Alternate*)
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Member Secretary
SHRI DEBASISH MAHALIK
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(FOOD AND AGRICULTURE) BIS

Panel for Code of Practices related to Slaughter House and Meat Industry
FAD 18/P-1

Organization	*Representative(s)*
ICAR - National Research Centre on Meat, Hyderabad	DR B. M. NAVEENA **(*Convener*)** DR M. MUTHUKUMAR DR RITUPARNA BANERJEE
ICAR - National Research Centre for Pig, Guwahati	DR R. THOMAS
Indian Meat Science Association, Hyderabad	DR RAJEEV RANJAN KUMAR
Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar	DR M. KIRAN
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Bureau of Indian Standards

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