

**SECRETARIAT**  
**OF**  
**THE TECHNICAL STANDARDISATION COMMITTEE (FOOD STUFFS)**  
**(DIRECTORATE GENERAL OF SUPPLIES AND TRANSPORT)**

**DEFENCE FOOD SPECIFICATIONS-2013**

**SPECIFICATION NO 83 : HAM CANNED**

**Quality**

1. The Ham shall be cured product of flesh of the hogs. It shall be cut from the carcass approximately 6 cm from the top of the Aitch bone. The feet shall be sawed off at the hock joint to expose the small cut in the bone. Curing may be dry curing or pickle curing by using a mixture of salt (sodium chloride), sugar, sodium nitrate and sodium nitrite in such proportion as will ensure that the amount of sodium or potassium nitrite not exceeding 200 ppm or commercial saltpetre not exceeding 500 ppm (calculated as sodium nitrate).
2. The Ham selected for canning shall be of good quality obtained only from carcasses of healthy hogs slaughtered in licensed premises and subjected to proper ante-mortem and post-mortem inspection by a representative of Remounts and Veterinary Directorate.
3. The Ham shall be reasonably firm, of good colour, free from hair, epidermis and dermis. It shall not have bruises and discolouration. It shall have good proportion of lean meat to fat. Coarse, dark coloured or soft ham shall not be used.
4. The Ham after curing shall be washed to remove excess salt. It shall then be dried and smoked in dry smoke from hardwood or hardwood sawdust for not less than 24 hours, at such a temperature and for such a length of time as will result in the material attaining bright attractive appearance, uniform colour and the characteristic aroma and flavour.
5. After smoking, the ham shall be cooled and sliced.
6. The ham shall be free from artificial colouring matter. Preservative other than sodium chloride and sodium nitrate shall not be used.

**Processing**

7. The sliced ham shall be rolled and wrapped in a grease proof paper and filled in thoroughly cleaned open top sanitary cans. The cans shall be exhausted by heat, steam or mechanical process and hermetically sealed in hot condition by a double seamer.
8. The packed cans shall be properly processed to ensure adequate sterilization of the product. Burning, overcooking or discolouration of the product shall be avoided.
9. Immediately after processing, the cans shall be effectively cooled by an approved method, with a cold current of air or by cold water. The water used for cooling shall be maintained in clean conditions and chlorinated to maintain a minimum residual free chlorine concentration of 2.0 ppm at all time.

### **Packing**

10. **Cans.** The ham shall be packed in plain or lacquered No. 1 tall cans conforming to Drawing No. IND/GS/FD/3 (b) or 11b butter cans conforming to Drawing No. IND/GS/FD/5 (b) or in 8 oz cans of size of 77 mm x 60 mm with Round easy open covers of ring pull type (RPT). The net content of each can shall be not less than 400 g. when packed in a No. 1 tall can, 450 g. When packed in a 11b butter can and 180 g. when packed in 8 oz cans. When lacquered cans are used, the lacquer shall be of such quality that it does not impart any foreign taste and smell to the contents of the can. The lacquer shall not be soluble in food and shall not show any signs of peeling off. The RPT cans will have an additional food grade plastic lid cover. The AT No and date to be printed by inkjet printing along the circumference of the can on the lower lid.

11. **Cases.** The cans shall be packed either in wooden cases conforming to Specification No.IND/GS/FD 4 (b) or in corrugated fibre board cartons conforming Specification No. 201. Each case shall contain 48 No. 1 tall cans or 36 Nos of 11b butter cans or 96 Nos of 8 oz cans.

### **Marking**

12. **Cans.** Each can shall be printed lithographed or stencilled indelibly with the following particulars. Printed labels shall not be used.

- (a) Description of contents.
- (b) Nett weight of contents (in grams).
- (c) Date of Manufacture.
- (d) Name of Manufacturer.
- (e) Manufacturer's licence number.

13. **Code Printing.** In the centre of the bottom plate of each can, code symbols with letters for name of firm, name of commodity, date, month and year of manufacture in two lines one above the other shall be printed with indelible food grade ink. The detailed format of the code would be:-

(a) **Upper Line.** Name of the firm represented by 2 alphabets to be allotted by the Director General of Supplies and Transport (ST-8) followed by name of commodity represented by 2 additional alphabets. The code symbol for canned ham shall be 'HC'.

(b) **Lower Lines.** This line will depict the date, month and year of manufacture and will always carry a maximum of 4 symbols. The date will be shown in full (digits 1 to 9 shall be prefixed with zero). The month will be represented by an alphabet (A or M for January, B or N for February, C or O for March, D or P for April, E or Q for May, F or R for June, G or S for July, H or T for August, I or U for September, J or V for October, K or W for November, L or X for December) and the year will be indicated by the last numeral of the year (0 for 1980, 1 for 1981 and so on).

14. **Cases.** The following particulars shall be stencilled on one side of each packing case: -

- (a) Description of contents size 5.0 cm characters or suitable size or as per The Legal Metrology (Packaged Commodities) Acts, 2009 and Rules, 2011.
- (b) Gross weight (in Kg).
- (c) Number of cans.
- (d) Name of Manufacturer.
- (e) Date of Manufacture.
- (f) Warranty expiry date.
- (g) No. and date of acceptance of tender.

### **Warranty**

15. In accordance with the Standard Warranty clause (appendix J), the warranty period of canned ham shall be 14 months.

### **Hygiene**

16. The entire premises where canned ham is to be manufactured including (a) Stock yards (b) Slaughter houses (c) Meat dressing rooms (d) Cold Storage (e) Hanging rooms (f) Preparation rooms (g) Processing rooms (h) Cooling tanks (j) Packing rooms shall be maintained in a perfectly hygienic condition and shall be open to inspection at any time by a competent authority duly authorised by the Director of Supplies and Transport and the Director of Medical Services (Army).

17. The entire process of slaughtering shall be subject to inspection by an officer authorised by the Director of Remounts and Veterinary Services, Army Headquarters. Ante mortem examination of the carcasses shall be obligatory.

18. The hygiene requirements of a factory producing canned ham shall be in accordance with Appendix 'H'. In addition, the following requirements shall be strictly complied with: -

- (a) All workers who handle the ham at any stage of its manufacture, shall be subjected to the most careful medical surveillance, in order to exclude those suffering from any infections, of contagious disease any skin lesion or injury (especially on the forearms and hands).
- (b) The medical surveillance shall include the careful taking of a history from each worker & potential worker in order to rule out the possibility of previous bowel infections. Person giving such histories will not be employed on the handling of ham.
- (c) Carrier tests – both faecal as well as urinary will be carried out on all handlers and potential handlers, by a competent and recognized laboratory, and the results duly attested by the officer in-charge of the laboratory, make available for inspection by the inspecting officers referred to in paragraph 17 above. Persons in whom such tests are positive will be rigidly excluded from all meat handling duties.

(d) At no stage, commencing from the time when the carcasses are being cut up, to the final sealing of the cans, shall either the ham or the cans be touched with the bare hands of workers. Sterilized rubber gloves shall be used for the purpose of transferring ham from one container to another. Those instruments will be sterilized by boiling for 15 minutes at the end of each day's work and stored under aseptic conditions until required for use.

(e) All workers engaged in the manufacture will wear well fitting caps made of white cotton material which shall be kept clean at all times. In addition, those workers engaged in the fillings, exhausting and sealing sections will wear clean muslin masks that shall effectively cover the mouth and nose. The masks shall be composed of not less than 4 layers of muslin.

(f) Scrupulous attention will be paid to the finger nails of all workers which shall at all times be clipped short.

(g) Meticulous care will be given to ensure that all workers scrub their hands with soap and a good hard nail brush, using running water, both at the commencement of the day's work, and after every visit to the lavatory or urinal.

### **Inspection**

19. An inspection shall be carried out by the Director of Supplies and Transport or an officer acting on his behalf, on all supplies tendered for acceptance. The decision of this officer shall be final.

20. The canned ham shall conform to the following analysis: -

(a) The cans on opening shall give a negative pressure of not less than 25 cm at  $27^{\circ}\text{C} \pm 2^{\circ}\text{C}$  under ambient atmospheric pressure.

(b) The headspace shall be not more than 16 mm.

(c) Sodium Chloride shall be not less than 1.5% and not more than 3.5%.

(d) Sodium or Potassium Nitrite shall not exceed 200 ppm. Commercial salt petre shall not exceed 500 ppm (calculated as sodium nitrite).

(e) Total fat shall be not less than 10.0% and not more than 30.0%.

(f) Acidity of molten fat shall not exceed 2.0 (as oleic Acid).

(g) Limits of heavy metals: -

(i) Lead not more than 5 ppm.

(ii) Copper not more than 15 ppm.

(iii) Zinc not more than 19 ppm.

(iv) Tin not more than 140 ppm.

(v) Arsenic not more than 1 ppm.

(h) The product shall pass the following microbiological tests: -

(i) When the cans are incubated for a period of 10 days at  $37^{\circ}\text{C}$  and 5 days at  $55^{\circ}\text{C}$ , the contents of the cans shall be free from any evidence of microbiological activity of any type.

(ii) The incubated cans shall be considered to have undergone microbiological spoilage if any can: -

(1) Shows a positive pressure, (2) Bulges when being incubated or remains bulged after incubation, (3) Leaks and Whether having a positive pressure or not shows evidence of bacterial proliferation as judged by.

(aa) A significant change in PH Value, (ab) Disintegration or digestion of the meat as compared with the unincubated samples, (ac) Microscopic examination of direct smears and (ad) Culture methods for testing bacterial multiplication and presence of pathogenic bacteria.

(j) Microbiological Parameters

(i)	Total Plate Count	-	Nil
(ii)	Coliform Count/gm	-	Nil
(iii)	E.Coli/gm	-	Nil
(iv)	Salmonella/25gm	-	Absent
(v)	Flat sour Organism/gm	-	Nil
(vi)	Anaerobes/gm	-	Nil
(vii)	Yeast and mould count/gm	-	Nil

Note.

\* Eight samples will be used for Microbiological test.

21. The methods of analysis shall be those laid down in the Indian Standard Institution Specification No. IS: 2475-1963 for smoked Bacon. Sodium nitrate shall be estimated according to the method prescribed in Appendix 'E' to IS Specification No. IS: 1743-1980 FOR Meat of Sheep and Goats canned in brine.

**Mandatory requirements of FSSAI/BIS**

22. All mandatory requirements of FSSAI/BIS, as amended from time to time pertaining to the above Specification including marking of BIS certification mark for container/contents. Best Before \_\_\_\_\_ coloured symbol for declaring vegetarian and non-vegetarian food etc on packs shall be complied with.

**STANDARD MINIMUM REQUIREMENTS OF HYGIENE IN FOOD FACTORIES**

1. To ensure the standard of hygiene in a factory the following minimum requirements shall apply:-

- (a) **Floors.** The floors should be impervious and kept clean all times.
- (b) **Lighting and Ventilation.** Adequate standards of lighting (natural and artificial) in working parts of the factory together with adequate ventilation and sufficient space for and protection from machinery.
- (c) **Fly / Rodent / Pest / Bird Proofing.** Fly / rodent / pest / bird proofing of factory premises to the extent necessary to protect raw material during storage and processing and the manufactured products until it has been packed and the containers sealed.
- (d) **Water-Supply.** An adequate supply of potable water in the factory and drinking water for the employees will be provided which shall be periodically tested and certified as free from injurious bacteria and other substances by a public health laboratory.
- (e) **Disposal of Wastes.** An efficient drainage system must be provided with proper methods of disposal of waste water and other effluents. Provision must exist to eliminate dusts/fumes if any.
- (f) **Conservancy.** A proper conservancy system adequately serviced with approved methods of disposal of human excreta.
- (g) Additional special hygiene precautions are necessary when waste products which are dangerous or likely to create conditions which are dangerous to health are produced at any stage during handling of raw materials or its manufacture.
- (h) **Safety.** Adequate fencing of machinery shall be secured in the case of all types of machinery and its moving parts and the moving machinery shall be kept in a position which provides sufficient safeguard against any accident. Each factory must have first aid box with necessary minimum items.

2. **Workers.**

- (a) So far as the health of the employees is concerned, they shall be periodically examined by Medical Officer and it should be ensured that no individual suffering from any communicable disease or any disability likely to result in contamination of the raw materials, implements, equipment's or finished products, is employed.

(b) All the employees should be protected against communicable diseases with preventive inoculation / vaccination.

(c) Provisions for personal hygiene of employees will include potable drinking water, washing facilities (Soap, basin or taps, nail brushes and towels) sanitary annexes and at least two sets of clean clothing for each employee for use only in the factory and Masks / hand gloves, where necessary. There should be a separate room for keeping the personal belongings and to change the clothes and for drying of wet clothes.

## **APPENDIX 'J'**

### **STANDARD WARRANTY CLAUSE**

1. The contractor warrants the supplies delivered to be sound, wholesome, and fit for human consumption for a specified number of months from the last day of the month of manufacture, in any climate and under all conditions of storage and movement in India.

2. In the event of the supplies or a part thereof having been declared during the period of warranty as being unfit for human consumption by the Director General of Supplies and Transport, or any officer acting on his behalf, (whose opinion as to whether or NOT the particular consignment is fit for human consumption will be final), the purchaser will have the right to dispose of the condemned stock in any way he considers necessary after giving due notice to the contractor and also, at his discretion, either to allow the contractor to replace the condemned stock within a specified period, or to recover from the contractor the contract price thereof together with all incidental and freight charges incurred from the place of delivery to the place where the supplies were ultimately condemned. The opinion of the Chief Director of Purchase, or an officer acting on his behalf, in regard to these charges will be final.

3. The declaration by the Chief Director of Purchase, or an officer acting on his behalf, communicated to the contractor in writing that a particular consignment has been condemned will be taken by the Contractor as the conclusive evidence of the proper condemnation of that consignment.