

## **CUT OUT TEST FOR CANNED FISHERY PRODUCTS**

**Aim:** To study the procedure for the examination of canned fishery products

**Introduction:** Examination of canned products is done to check the overall quality of the canned foods, which have been produced on a commercial scale basis in an industry. An experiment is also done to check whether the products meet the prescribed standards of a consumer or not. Many of the commercially prepared canned products are produced as per BIS (formerly ISI) standards to improve and to maintain uniformity and good quality of the product.

**Quality of the product can be judged based on:**

- 1) **Physical Test** : Gross weight, number of pieces, net weight, volume of filling medium, rusting, dents, seam defects etc.
- 2) **Organoleptic Test** : Taste, texture, condition of bones, flavour, odour etc.
- 3) **Chemical test** : Salt concentration, brix reading, turbidity, colour, acidity etc.
- 1) **Microbiological test** : TPC, Spore former etc.

Hence, cut out test is carried out to appraise the general quality of a canned product. In this test, two conditions of the food contents, the external and internal conditions of the can and other characteristics of the product are examined by certain Organoleptic, physical, chemical and microbiological tests.

**Materials & Equipments:**

- 1) Canned food (mackerels, sardines, shrimp etc) 4-6 cans.
- (2) Tone tester
- (3) Physical balance
- (4) Vacuum gauge
- (5) Can opener
- (6) Brix Refractometer
- (7) Scale
- (8) pH paper (near neutral range).

**Procedure:**

If the cans are labeled, note the particulars on the label

(Preserve the label if necessary).



Record the embossed code mark on the lid



Observe the external conditions of the cans, such as rusting, dents, physical damage, seem defects etc.



Test the tone and get an idea of the fill and vacuum



Determine the gross weight



Measure the vacuum



Cut the lid almost completely, open and observe the food surface and inside of lid. Measure headspace



Drain the contents for 5 min. collect the liquid in a measuring jar. Note the volume, turbidity, colour, brix reading etc. of the drained liquid.



Note down the weight of Can + Solids



Transfer the solids to a white enamel dish and examine. Note the number of pieces; breakage, colour, texture, flavour etc. also look for foreign matter



Observe the bottom and inside of the can, looking for settled curds, skin adhesion, lacquer peeling, blackening etc. wash, dry and weigh the empty can.

**Observations:** Record your observations in the following Proforma

Can No.	1	2	3	4	5
Product					
Code					
Manufacturer					
Date of production					
Date of testing					
Can-size & type					
Std. Solid-Wt. / Net Wt.					
Vacuum					
Gross weight					
Solid + Can Wt.					
Empty Can Wt.					
Solid Wt.					
Liquid Wt.					
Net Wt.					
± Solid Wt.					
± Net Wt.					
Pack Wt.					
Colour					
Texture					
Flavour					
Style (Appearance)					
No. of pieces					
Salt/Sugar degree					
Turbidity					
Acidity					
pH					
Size of pieces					
Broken or Flakes					

Adhesion					
Curds					
Remarks					

**Note:** Compare the obtained observations with I.S.I. specifications for canned fishery products.

**Vacuum:** In canning technology, vacuum means the difference between the atmospheric pressure and internal pressure of the can.

Bourdon tube type vacuum gauge is used to measure the vacuum. The same instrument can also be used for measuring pressure. A curved flat tube, which is present inside the instrument, is subjected to different variations in pressure. The tube has a piercing point at one edge. Rubber gasket is present at the piercing edge to make airtight contact while piercing, between can and the instrument. When we pierce into the can, the tube moves and the vacuum reading is given on the scale, which is fixed at the top of the instrument.

**Precautions:**

- a) Pierce towards the rim of lid of the can, otherwise pressure applied at the centre may leave the can lid concave resulting in faulty vacuum results.
- b) Use moderate pressure to pierce the sharp edge of the pressure gauge into the can lid otherwise air tight contact may break the reading shown may be less than what is actually inside the can.

**Note:**

- 1) In case, the filling medium is very thick, the whole content of the can is poured out and the solids are filled into the can after the removal of the filling medium.
- 2) Canned fishery products, fish with bones are said to have received complete processing, if a person will be able to crush the bones between the finger tips to see whether it is easily crushable or not. Bones become easily crushed by finger, it indicates adequate heat processing, but bones not easily crushed by finger it show that heat process is an inadequate.

**Determination of drained weight:**

Drained weight can be obtained after draining the contents of the can for 5 minutes over IS sieve 200. Carefully clean and dry the sieve and weigh. Transfer the contents of the can to the sieve. Allow to drain for 5 minutes. Weigh the sieve with the contents. The difference between the two values is the drained weight of the product. Drained weight may be calculated as percentage of the water capacity of the can.

**Determination of the Head Space:**

**Method 1:** Cut out the lid on the edge of the end plate with a rotary cutter and lift the cut portion carefully so that the shape of the end plate is not altered. Take the measurement from the top of the double seam to the surface at the liquid using a ruler. This gives the headspace.

**Method 2:** Cut out the edge of the end plate partially with a rotary cutter and lift the cut portion carefully so that the shape of the end plate is not altered. Introduce the measuring stick, a clean straight flat piece of wood of suitable type not more than 3.2mm thick and 6.4mm wide, in the can making certain that it goes straight in and rests flat against the bottom of the can and against the body plate. Allow to rest for a short time and lift the stick straight. Find out from the length of the stick, which is wet, the space occupied by the contents of the can. Empty out the contents carefully and fill it completely with water. Again introduce a similar measuring stick and find out the length of the stick that is wet. The difference between the two readings gives the empty head space.