

## PRODUCTION ASP FISH OF DRIED FROM CHILLED

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This article is aimed at presenting the technology for the production of dried fish from chilled asp. Chilled raw materials are used for the production of dried fish from chilled asp. A technological scheme for the production of dried fish from chilled asp is drawn up and the technological processes of its production are described.

**Keywords:** chilled asp, drying, raw materials, production, products.

Asp (*Aspius aspius*) is the most common species of fish of the asp genus of the carp family of the order *Carpiformes*. This fish grows up to 120 cm in length and weighs 12 kg, but usually the size is 80 cm with a weight of 1,5 – 2,0 kg. The asp differs from other fish by its dark bluish-gray back, silvery-grayish sides and white belly. The dorsal and caudal fins are gray, with dark tips; the lower part of the tail is somewhat longer than the upper; the rest of the fins are reddish at the base and grayish towards the end, the head is somewhat elongated, with the lower jaw protruding upwards.

1. Reception of raw materials. For the production of dried fish, we can use frozen and chilled fish, raw fish must be sent for processing without delay. For the production of this type of product, we use chilled asp.

Raw materials used for the manufacture of dried fish from chilled asp must meet the quality requirements of the current GOST 814-2019 "Chilled fish. Specifications".

When receiving raw materials, their quality, type of fish, type of packaging, batch weight, storage and transportation conditions, supplier or manufacturer, and duration of storage are recorded. When determining the quality of raw materials, the requirements of GOST 7631-2008 are guided,

GOST 7636-85 "Fish, Marine Mammals, Marine Invertebrates and Products of Their Processing. Methods of analysis" and GOST 814-2019 "Chilled fish. Specifications". Chilled fish is stored at an air temperature from minus 2 °C to zero degrees.

Chilled asp in terms of organoleptic characteristics must meet the requirements (according to GOST 814-2019). The presence of protozoa, as well as helminths dangerous to human health, is not allowed in fish, which meets the requirements of regulatory documentation (TR EAEU 040/2016). The temperature in the thickness of the fish should be from minus 1 to plus 50 C. Chilled fish should be freed from ice. Fish that arrived at the workshop by hydraulic transporter do not need to be washed.

2. Sorting. This operation involves the separation of low-quality raw materials, as well as the separation of fish into size fractions using special machines. Sorting by size is carried out for the purpose of high-quality mechanized cutting of fish, since the entry of heterogeneous fish into the machine leads to large losses of raw materials.

Sorting by quality is carried out manually, discarding fish that does not meet the requirements (mechanical damage). If the total amount of substandard fish does not exceed 10%, then sorting is carried out by a selective method, culling fish unsuitable for processing. Fish not lower than 1st grade. Sorted fish of different size groups should be sent for processing in separate batches [3].

3. Washing. Rinse the sorted fish thoroughly. The water temperature for washing fish should not exceed 150 C. The ratio of fish to water should be 1:2. Water must meet the requirements of regulatory documentation.

4. Dripping. To remove excess moisture, it is necessary to keep the fish on a mesh conveyor. The duration of drainage is 10-15 minutes.

5. Ambassador. Ambassador is a necessary technological operation in the production of dried products. Salt acts as a chemical method of preservation. According to the methods of implementation, dry, wet and mixed salting are distinguished. In dry salting, the fish is mixed with crystals of table salt. The "fish-salt" system is formed. In wet salting, the fish is immersed in a saturated salt solution. The "fish-brine" system (tuzluk) is formed.

Depending on the temperature, the ambassador can be warm, cooled, cold. You can salt the prepared fish in a mixed way with cooling. The temperature of the salt solution to be poured should not exceed 100 C. Fish should be cooled during salting with an ice-salt mixture (in a ratio of 3:1), ice should be used for the preparation of an ice-salt mixture up to 40%, salt – 8% of the ice mass [4].

5.1. Preparation of saline solution. To prepare a salt solution, use table salt in terms of quality and safety indicators corresponding to GOST 51574-2018 "Edible salt. General specifications". The density of the salt solution is 1.18 – 1.20 g/cm<sup>3</sup>. The temperature of the poured salt solution should not exceed 100 C.

6. Washing salted fish. Wash the fish unloaded from the salting tank thoroughly in benign natural tuzluk or pure salt solution with a density of 1.14 – 1.16 g/cm<sup>3</sup> until salt crystals and impurities are completely removed.

7. Leveling salinity. Put the washed fish on clean tables, racks or in baths with a layer of no more than 0.5-0.6 m and keep to equalize the mass fraction of salt in the thickness of the fish meat. The temperature in the room in which the fish is leveled should not exceed 100 C. The process of leveling salinity is from 1 to 4 days. The end of the process of equalizing the salinity of the fish is set by the laboratory of the enterprise.

8. Washing. Rinse the fish carefully in clean running or frequently changed water at a temperature not exceeding 150 C to desalinate the surface layer of meat to avoid the appearance of a layer of salt (brine) on the fish during drying.

9. Soaking. Salted fish with a mass fraction of salt in meat of more than 6% should be soaked in fresh water at a temperature not exceeding 150 C. Soaking fish should be carried out in specially equipped pools or baths with a false bottom with a ratio of water and fish of at least 2:1. Load the fish into the soaking baths in bulk or stacked in mesh containers. In the process of soaking, after 2-6 hours, take breaks for 1 – 2 hours for the redistribution of salt in the fish meat. Finish soaking when the mass fraction of salt in the fish meat reaches 3 - 6 %.

10. Dripping. The fish is sent for a dripping operation, the purpose of which is to remove excess moisture from the surface of the fish. Drainage is carried out on a mesh conveyor in the process of moving the fish to the next technological operation.

11. Stringing fish on rods, hanging on slats. For drying, string the fish on metal rods (ramrod), prick on slats or lay out on sieves. String the uncut fish on the rods (ramrod) through the eyes or through the mouth and gill slit, so that the backs of all the fish are turned to the same side and do not come into contact with each other (the distance between neighboring fish should be at least 5-6 cm).

12. Fish drying. Drying is the slow dehydration of salted fish under natural or artificial conditions at ambient temperature or a given temperature.

Fish drying can be carried out in natural and artificial conditions. Drying of fish in natural conditions should be carried out in clear dry weather at a temperature of 8 to 28 ° C. Hangers should be installed in open areas, in unshaded places, well blown by the wind. Frames with fish strung on rods (ramrods), slats with fish impaled on hooks or hung on twine should be placed on hangers so that the fish (or bunches of fish) are arranged in a checkerboard pattern [3, 4].

Fish drying should be carried out in artificial conditions in special drying chambers or tunnels equipped with supply and exhaust ventilation and devices for heating or cooling the air entering them. The air temperature in the chamber should be from 15 to 28 0C. Optimal relative humidity when drying fish from 40 to 60 %. The speed of air movement in the chamber should be from 0.5 to 5 m/s. Approximate duration of drying is up to 5 days.

13. Sorting. Sort the finished dried fish by quality.

14. Packaging.

14.1. Preparation of containers and packaging materials. Packaging for food fish products must comply with the requirements of this Technical Regulation and the requirements of the Technical Regulation of the Customs Union "On the Safety of Packaging" (TR CU 005/2011). Packaging of edible fish products should be carried out in conditions that do not allow contamination (contamination) of products.

Dried fish is packed in corrugated cardboard boxes. Before packaging, containers and packaging materials are subjected to visual inspection and the integrity of the package, the absence of contamination and odor are determined.

15. Labeling. Labeling of edible fish products packed not at the place of manufacture of these products (except for cases of packaging of edible fish products in consumer packaging by retail trade organizations) shall contain information about the manufacturer and legal entity or individual entrepreneur packing food fish products not at the place of their manufacture for their subsequent sale or by order of another legal entity or individual entrepreneur.

16. Storage and sale of finished products. Store dried fish with a fat content of less than 10% at a temperature not exceeding 200 C in well-ventilated rooms protected from sunlight. The shelf life of dried fish is no more than 2 months.

### Literature

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