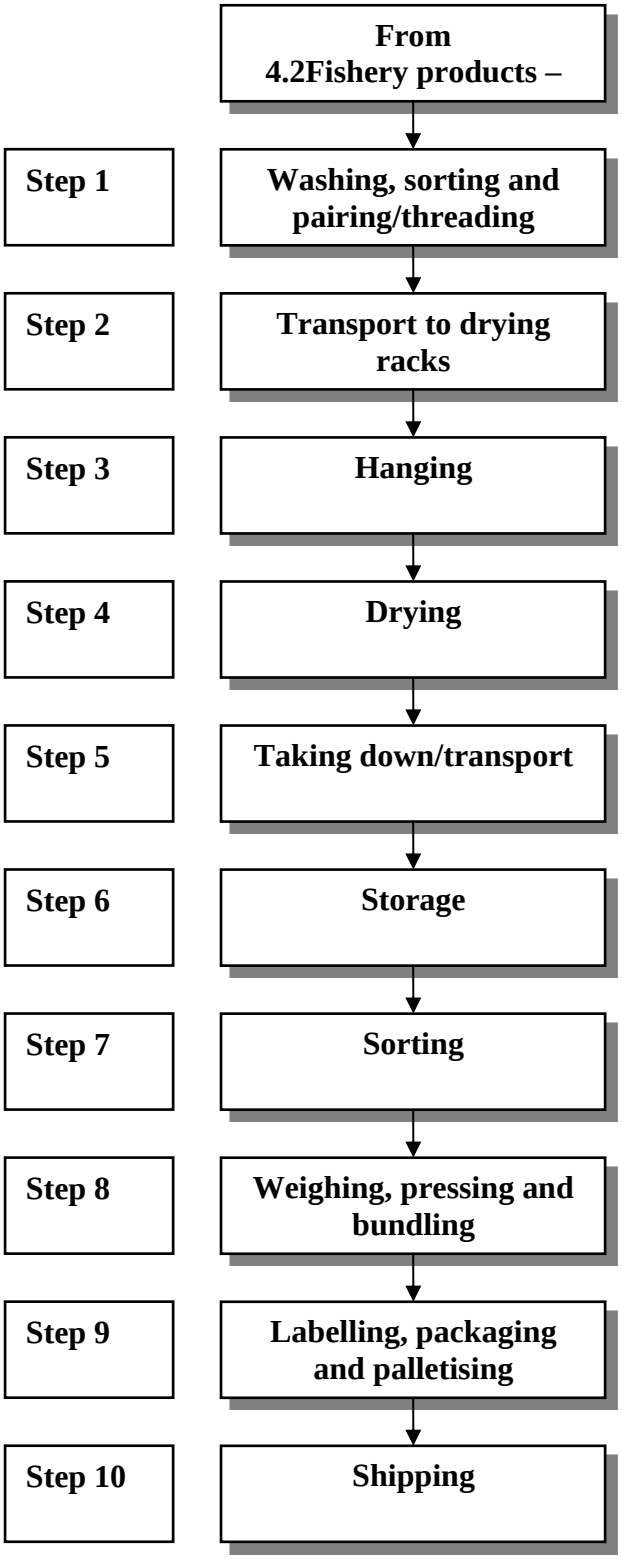
Sufi AS N-457	Chapter name: 4.10	Document ID: 4.10.1	Chapter title: HACCP documentation
Document name: Flow diagram for processing – dried fish	**Prepared by:** Sørensen	**Date approved:** 18.02.2019	**Approved by General Manager (signature):**
References:	**Applies to:** Self-monitoring system	**Number of pages:** 1 of 1	



4.10.2 Operation description for processing – dried fish

Level	Description:
1	If the company receives ready-dried fish from an external supplier, the next stage of the operation description will be step 6. Fish from the company's own boats are received directly from the reception position or from cold storage. Fish/heads are tipped into rinsing conveyors, which carry the fish to the pairing table. Sorting and pairing is carried out continuously. Two equal-sized fish are tied together using pairing yarn, so that their abdomens are facing the same way. Heads are threaded onto needles and lines until there are enough heads. The line is then knotted at the final head and the heads are then ready for hanging. Fish/heads are transported to racks according to capacity. Fish that are not suitable for drying are sorted out for other production.
2	Transportation to racks must be done hygienically in clean packaging/transport media. Fish/heads are transported to different sites in goods vehicles with compartments. The fish must not come into contact with the ground as this could cause contamination. During transportation to racks, fish/heads are covered with plastic, tarpaulin or other containers in order to avoid potential contamination from the external environment.
3	Raw timber or laths on which fish/heads are hung are not impregnated or given any other treatment that could transfer harmful substances to the fish. The Norwegian Food Safety Authority has interpreted this such that the framework may be made from such materials. This requires that the fish does not come into contact with such materials during production. Ready-paired fish are delivered from tubs by hand or tipped from tubs into bulk feeders placed on the working platform. The fish is then rinsed and then hung from the work bench on the platform. The fish are hung over poles with sufficient space between them so that they do not touch after a few days' drying. This is to prevent adhesion marks and to achieve good airing. The poles must also be placed with sufficient space between them to prevent contact with the fish. Large fish are hung at the thickest end of the pole. Gas cannons and scarecrows (bird-scarers that make a sound and move) are used to keep birds away from the area.
4	The drying of fish/heads is subject to prevailing weather conditions. During windy periods, it must be checked that no fish have fallen onto the ground and that the poles have not been blown together. The fishes' livers are removed during the drying period.

Level	Description:
5	The fish must be taken in when dry. You can check if the fish is dry by pushing a thumb into the side by the anal fin. If the flesh yields, the fish is not sufficiently dry. Dried fish must also make a clear sound when struck against firm ground. The fish must be taken in in dry weather. The fish is lifted from the poles without cutting the pairing band and laid directly on approved pallets that are placed on the working platform. The pallets are then covered with perforated plastic in order to prevent contamination of the fish, while at the same time allowing air in. They are then lifted down form the platform and placed on approved goods vehicles. Heads are taken in tubs, enclosures or cleaned load carriers for permanent mounting on a tractor/wheeled loader. These are considered dry once they weigh approx. 25% of their weight when hung.
6	On receipt at stores, the fish are stacked on pallets and visually checked to see if any fish have become contaminated. If contaminated fish are found, they must be removed to prevent them being mixed with good fish. While stacking the fish in layers on pallets, liver residues and any other foreign bodies are removed. Large fish, or fish that are not considered sufficiently dry, are placed on separate pallets and placed in the secondary drying room to prevent damage to them. Different species must be separated. There must be adequate space between pallets and layers in order to ensure good ventilation and circulation. Heads are placed in large piles. It is particularly important that they are dry when they are taken down from drying racks. Pallets are also placed on the floor to prevent contamination. There must also be air holes in the storeroom to ensure good ventilation. In order to ensure sufficient airing, fans can be installed. Dehumidifiers are also used to remove moisture from the air. The fish are also regularly inspected for mould. Any mould must be removed immediately.
7	Dried fish that are ready for sale must have a water content of approx. 16%. The dried fish are sorted at a table and assessed for length, thickness and quality. Fish with visible parasites are sorted out and must not be used for human consumption. Sorted fish are placed on pallets and clearly labelled subject to the same conditions as are applicable for sorting. Heads are also sorted based on visual checking for three different criteria.
8	Sorted fish are weighed in bundles of 45 kg or 50 kg net weight. Some fish are weighed and packed in 25 kg boxes. The dried fish bundles are then put into a press. The bundles are then pressed to a height of approx. 40 cm and tied with plastic tape or metal wires before being placed on pallets. Some fish are placed individually, laid crosswise on pallets of approx. 3-400 kg Heads are packed in bags of 30 kg. The pallets are wrapped in plastic. Fish/heads may not contain any kind of moisture in order to prevent the growth of mould on the fish or condensation in the containers after shipping.

Level	Description:
9	After pressing/bundling, the fish are placed in jute sacks that have previously been labelled according to established regulations. The bundles or boxes are then placed directly on pallets. Fish that are ready for shipping are stored in a dried fish store while awaiting shipping. Heads are pressed in jute sacks, which are then placed on pallets.
10	The pallets are taken out of the dried fish store and loaded directly onto refrigerated goods vehicles, boats or containers. Heads are also shipped in dry containers. It is checked that the number of bundles or boxes corresponds with the order confirmation.

4.10.4 Risk analysis for processing – dried fish

(1) Ingredients, additives and process stages	(2) Identified potential risk that arises and can be controlled/prevented/eliminated/reduced during the stage	(3) Is this an important prod. Safety risk (Yes / No)	(4) Justify the decision made in column (3) (Documentation/ verification)	(5) What preventive measures can be taken in order to prevent, remove or reduce the identified risk	(6) Is this a critical control point (Yes / No)
1 **Washing and separation**	Biological: Unclean freshwater or seawater	No	Danger of contamination with harmful bacteria during the washing process. The risk is addressed during basic checks.	Purified water is used. Checks are documented in accordance with instructions for receipt checks of fresh/seawater. Water samples once every quarter at production.	No
	Chemical: Contaminated water	No	Contamination in reservoirs from land areas or from precipitation. The risk is addressed during basic checks.	Chemical analysis from waterworks must be available in accordance with provisions in regulations.	No
	Chemical: Detergents	No	Detergents are stored in a separate locker/room.	Routines for storage and use of detergents.	No
	Chemical: Oil from hydraulic systems/trucks	No	Daily check of hydraulic systems on trucks.	Maintenance of hydraulic systems on trucks.	No
	Physical activities: Various fragments from the building structure: E.g. glass fragments from light fittings, flakes of paint from ceilings and walls etc.	No	The company has drawn up a maintenance plan for the building structure.	Maintenance plan for buildings and continuous non-conformance management.	No
2 **Transport to drying racks**	Biological: Danger of contamination in transit.	No	Fish can become contaminated by birds (eaten by birds, droppings) or by dust and other impurities. The risk is addressed during basic checks.	Preventive measures involving covering loading areas, containers or tubs. Covered with plastic or lids during transport to drying racks.	No
	Chemical: Oil from hydraulic systems/trucks	No	Daily check of hydraulic systems on trucks.	Maintenance of hydraulic systems on trucks.	No
	Physical activities: Stones, dust and sand	No	Permanent cover at goods-in. The road/goods-in area is tarmacked. Fish are covered during transport.	Maintenance and cleaning of tarmac on the road/goods-in area.	No
3 **Hanging**	Biological: Danger of contamination during hanging.	No	Fish can become contaminated by birds (eaten by birds, droppings) or dust and other impurities. The risk is addressed during basic checks.	Preventive measures by keeping birds away from the rack area. Deploying bird-scarers. Covering racks with netting and/or use of gas cannons.	No
	Chemical:	No	No relevant risk.	No measures.	No
	Physical activities:	No	No relevant risk.	No measures.	No

(1) Ingredients, additives and process stages	(2) Identified potential risk that arises and can be controlled/prevented/eliminated/reduced during the stage	(3) Is this an important prod. Safety risk (Yes / No)	(4) Justify the decision made in column (3) (Documentation/ verification)	(5) What preventive measures can be taken in order to prevent, remove or reduce the identified risk?	(6) Is this a critical control point? (Yes / No)
4 **Drying**	Biological: Danger of contamination during the drying process	No	Fish can become contaminated by birds (eaten by birds, droppings) or by dust and other impurities. The risk is addressed during basic checks.	Preventive measures by keeping birds away from the rack area. Deploying bird-scarers. Covering racks with netting and/or use of gas cannons.	No
	Biological: Parasites	No	Risk of live parasites in the flesh of the fish. The risk is addressed during basic checks.	Parasites will automatically be killed in the drying process. The water content of the fish flesh will be reduced so that any live parasites will be killed.	No
	Biological: Growth of harmful microorganisms and fungi. Also frost damage.	No	The risk is dependent on prevailing weather conditions. Risk of frozen fish at excessively low temperatures. Risk of mildew, mould and bacterial growth at excessively high humidity and temperatures. The risk is addressed during basic checks.	This risk cannot be prevented since this stage is dependent on prevailing weather conditions. Fish that is harmful for consumers will be sorted out when taken in and during the sorting process.	No
	Chemical:	No	No relevant risk.	No measures.	No
	Physical activities:	No	No relevant risk.	No measures.	No
5 **Taking down/transport**	Biological: Danger of contamination during taking down and transport. Growth of fungi during storage	No	Fish can become contaminated by birds (eaten by birds, droppings) or by dust and other impurities. Fish can fall directly onto the ground and become contaminated by bacteria, contaminants, etc. The fish are moist or wet and there is a high risk of mildew growth during storage. The risk is addressed during basic checks.	The ground is covered with plastic or tarpaulin or such like to prevent fish coming into contact with the ground. Preventive measures involving covering loading areas, containers or tubs. Covered with plastic or lids during transport to warehouse. A supervisor checks that the fish is sufficiently dry before it is moved into stores. Before the fish is brought into stores, it is checked to see if any of it is contaminated. Fish that is contaminated must not be mixed with non-contaminated fish.	No
	Chemical: Oil from hydraulic systems/trucks	No	Daily check of hydraulic systems on trucks.	Maintenance of hydraulic systems on trucks.	No
	Physical activities: Stones, dust and sand	No	Permanent cover at goods-in. The road/goods-in area is tarmacked.	Maintenance and cleaning of tarmac on the road/goods-in area.	No

(1) Ingredients, additives and process stages	(2) Identified potential risk that arises and can be controlled/prevented/eliminated/reduced during the stage	(3) Is this an important prod. Safety risk (Yes / No)	(4) Justify the decision made in column (3) (Documentation/ verification)	(5) What preventive measures can be taken in order to prevent, remove or reduce the identified risk?	(6) Is this a critical control point? (Yes / No)
6	Biological: Toxic fungi and harmful microorganisms.	No	Growth of toxic fungi and harmful bacteria at excessively high ambient humidity and temperatures. The risk is addressed during basic checks.	Keep the temperature as low as possible. Ensure good ventilation of storage premises. Also use dehumidifiers.	No
	Chemical: Detergents	No	Detergents are stored in a separate locker/room.	Routines for storage and use of detergents.	No
Storage	Chemical: Oil from hydraulic systems/trucks	No	Daily check of hydraulic systems on trucks.	Maintenance of hydraulic systems on trucks.	No
	Physical activities: Various fragments from the building structure: E.g. glass fragments from light fittings, flakes of paint from ceilings and walls etc.	No	The company has drawn up a maintenance plan for the building structure.	Maintenance plan for buildings and continuous non-conformance management.	No
7	Biological: Toxic fungi and harmful microorganisms. Parasites.	No	Growth of toxic fungi and harmful bacteria at excessively high ambient humidity and temperatures. Danger of live parasites in the flesh of the fish. The risk is addressed during basic checks.	Keep the temperature as low as possible. Ensure good ventilation of storage premises. Also use dehumidifiers. Sort out fish that is potentially harmful for the consumer. The necks are opened using neck cutters in order to check for the presence of live parasites in the flesh of the fish. Dried fish containing live parasites must not be sold for human consumption.	No
Scrap	Chemical: Detergents	No	Detergents are stored in a separate locker/room.	Routines for storage and use of detergents.	No
	Physical activities: Various fragments from the building structure: E.g. glass fragments from light fittings, flakes of paint from ceilings and walls etc.	No	The company has drawn up a maintenance plan for the building structure.	Maintenance plan for buildings and continuous non-conformance management.	No
8	Biological: Toxic fungi and harmful microorganisms.	No	Growth of toxic fungi and harmful bacteria at excessively high ambient humidity and temperatures. The risk is addressed during basic checks.	Keep the temperature as low as possible. Ensure good ventilation of storage premises. Also use dehumidifiers.	No
Weighing, pressing and bundling	Chemical: Detergents	No	Detergents are stored in a separate locker/room.	Routines for storage and use of detergents.	No
	Physical activities: Various fragments from the building structure: E.g. glass fragments from light fittings, flakes of paint from ceilings and walls etc.	No	The company has drawn up a maintenance plan for the building structure.	Maintenance plan for buildings and continuous non-conformance management.	No

(1) Ingredients, additives and process stages	(2) Identified potential risk that arises and can be controlled/prevented/ eliminated/reduced during the stage	(3) Is this an important prod. Safety risk (Yes / No)	(4) Justify the decision made in column (3) (Documentation/ verification)	(5) What preventive measures can be taken in order to prevent, remove or reduce the identified risk?	(6) Is this a critical control point? (Yes / No)
9	Biological: Toxic fungi and harmful microorganisms.	No	Growth of toxic fungi and harmful bacteria at excessively high ambient humidity and temperatures. The risk is addressed during basic checks.	Keep the temperature as low as possible. Ensure good ventilation of storage premises. Also use dehumidifiers.	No
	Biological: Growth of microorganisms or fungi on pallets	No	Receipt check of packaging. The pallets must not be damp/wet or contain fungi.	Receipt check of packaging. The pallets are kept in a dry and approved packaging store.	No
Labelling, packaging and palletising	Chemical: Detergents	No	Detergents are stored in a separate locker/room.	Routines for storage and use of detergents.	No
	Chemical: Oil from hydraulic systems/trucks	No	Daily check of hydraulic systems on trucks.	Maintenance of hydraulic systems on trucks.	No
	Physical activities: Various fragments from the building structure: For example glass fragments from light fittings, Flakes of paint from ceilings and walls, etc.	No	The company has drawn up a maintenance plan for the building structure.	Maintenance plan for buildings and continuous non-conformance management.	No
10	Biological: Growth of harmful microorganisms.	No	Not labelled with shelf-life and temperature requirements (requirement). The risk is addressed during basic checks.	Check that the goods are labelled with the correct shelf-life and temperature requirements during storage/transport.	No
	Chemical: Detergents	No	Detergents are stored in a separate locker/room.	Routines for storage and use of detergents.	No
Shipping	Chemical: Oil from hydraulic systems/trucks	No	Daily check of hydraulic systems on trucks.	Maintenance of hydraulic systems on trucks.	No
	Physical activities: Stones, dust and sand	No	Permanent cover at goods-in. The road/goods-in area is tarmacked.	Maintenance and cleaning of tarmac on the road/goods-in area.	No
	Physical activities: Various fragments from the building structure: For example glass fragments from light fittings, Flakes of paint from ceilings and walls, etc.	No	The company has drawn up a maintenance plan for the building structure.	Maintenance plan for buildings and continuous non-conformance management.	No