

Part 1 (Tanks and Buildings)

Crab and Lobster Live Holding Systems

Note: Figures referred to in this document are not available.

1990/1/SF

The increased demand for crabs and lobsters, and the requirement to export live shellfish has led to the Industry needing better methods and information about live holding. This data sheet is part of a new series forming a guide to the selection of equipment needed to successfully store and transport live crabs and lobsters. These data sheets should be used in conjunction with data sheets; produced in 1987 Handling Crabs for the Live Trade. Parts I and II. This sheet provides a guide to the selection of a suitable building, and the construction of holding tanks for crabs and lobsters.

Building - Structural Requirements

In choosing a building you must first consider whether or not it is in the best location for the operation you want to carry out. The first details to check are:-

1. Is the location compatible with your suppliers i.e. not too far from landing port, and is it convenient for supplying your customers.
2. Is there a convenient supply of good quality seawater and facilities for discharging used seawater. Will the savings due to building near a seawater supply compensate the extra cost of artificial seawater and a filtration system.
3. Is the building of adequate size for the throughput envisaged. Floor areas can be calculated from stocking densities giving an allowance for working space.
4. Is there clear access for the largest vehicle visiting the building.
5. Are the industrial activities in adjacent premises compatible with your operation and not put the product at risk from contamination from e.g. smoke, fumes, oil, etc.
6. Facilities for the disposal of dead animals and food type waste must be available.

The building should provide a cool low light environment for the holding tanks. The tanks should not be in direct sunlight. The water temperature should ideally be maintained between 5°C and 10°C but the avoidance of rapid changes in temperature is more important. Good levels of insulation will help with temperature control. The minimum U value for commercial buildings, walls and roofs is 0.45 w/m²/°C.

Concrete floors in good condition and with good drainage and that are easy to clean are acceptable. They should be strong enough to support the weight of the tanks equal to a loading of approximately 1 tonne/m². Channel type drains capable of coping with any tank leakages and regular hosing down are preferable. Falls between 1:50 and 1:80 are recommended. The drains will need to cope with large quantities of salt water when system water changes are made, and should have traps to prevent solid material from blocking pipe work. Salt water environments are very corrosive and care should be taken to use corrosion resistant materials for all equipment where possible. Adequate means of ventilation will help to control condensation and limit damage to the structure of the building.

Before making any structural changes consult your Local Authority Environmental Health Department, and Building Inspectors. They will be able to advise if your plans are acceptable. If cooking and processing on the premises is envisaged the plant becomes a processing establishment and will have to comply with E.C. Regulations. (New EEC regulations came into force in 1993 although at present there is no direct reference to live holding systems).

Fig. No. 1 shows the layout of a crab and lobster holding facility with a capacity of 6 tonne and 900 kg respectively.

Holding Tanks - Crabs

Crabs can be stored at a relatively high density of 250 kg/m². If the crabs are stored to a depth of 500 mm in the tanks this gives a sensible storage density. Actual dimensions of each tank will depend on the maximum stock of animals in the building. Fig. No.2 gives a guide to the general sizes to which the tanks can be constructed.

An inexpensive method of construction is to use concrete with a waterproofing additive over a brick or breeze block former. They can also be constructed from fibreglass over a wooden carcass or fabricated from glass reinforced plastic (GRP) panels, purpose built aquaculture tanks are available. Whatever the construction, tanks should have a smooth interior surface and rounded internal corners, this makes the tanks easier to clean, prevents stagnation and improves water circulation when in use.

A separate settling tank or sump will be needed for recirculating systems. This should be large enough to hold the total water content of the storage tanks and so arranged that all the water can be drained into it by gravity should there be a power failure. If crabs or lobsters are left in stagnant water they will rapidly consume all the oxygen in the water and die. They will survive longer out of water in a damp atmosphere.

Holding Tanks - Lobsters

Lobsters have a much lower storage density than crabs - 25 kg/m². This means they can be more efficiently stored in shallow trays on a racking system Fig. No. 3. Alternatively, crab tanks can be used if the lobsters are stored in stacked boxes - but these must allow an adequate circulation of water.

The tray can be fabricated from fibreglass over wood or ready made GRP trays. The sump tank can be built from concrete over brick similar to the crab tanks or a suitable GRP tank.

The supporting structure can be constructed from wood. This should be covered with a suitable waterproof food quality paint. Several proprietary racking systems are available that can be adapted for supporting trays; make sure to choose one that is resistant to salt water. If lobsters are to be imported from Canada or the USA they must be kept in complete isolation from UK lobsters with a separate water system. Under certain circumstances it is necessary to have a licence to hold American and European lobsters. Information regarding your particular case can be found from the MAFF Local Inspector/Fishery Officer or from Ministry of Agriculture, Fisheries and Food, Fisheries Division 1A, Nobel House, 17 Smith Square, London, SW1P 3JR.

Maintenance and Hygiene

Cleanliness and good housekeeping are essential. Buildings and floor space should be kept clean and tidy. The building layout should be designed with this in mind. A regular routine of cleaning should be established, such as hosing down at the end of each shift. Tanks should be drained down and checked regularly for dead animals which must be removed. Do not make the common mistake of standing on the animals. Tanks need to be washed down and pipe work flushed through with disinfectant whenever the loading cycle allows. Disinfectant should be used in accordance with the manufacturer's instructions. Care should be taken to prevent disinfectant affecting biological filters if they are being used. Settlement and sump tanks should be cleaned regularly.

Further Reading

- 1) Food Factory Design - British Food Manufacturing Industries Research Association.
- 2) MAFF Laboratory Leaflet No. 37 - MAFF Lowestoft. The Live Storage of Lobsters.
- 3) 1987/1/SF Handling Crabs - Seafish Technical Information for the Live Trade. Parts I and II.
- 4) 1988/2/ID. Market Buildings - Seafish Technical Information Service.
- 5) Code of Practice for - City of Aberdeen District Council Hygienic Fish Processing.
- 6) Handling, Transport and Storage of Live Crabs and Lobsters. 1986 Seafish Open Learning Module. Whitely N & Taylor E.W.

Further Information

Sea Fish Industry Authority
Seafish House
St Andrews Dock
Hull, HU3 4QE

Shellfish Association
of Great Britain
Fishmongers Hall
London Bridge
London, EC4R 9EL

Ministry of Agriculture, Fisheries & Food
Nobel House
17 Smith Square
London SW1P 3JR

Dept. of Agriculture Fisheries and Food
Pentland House
47 Robbs Loan
Edinburgh, E14 1TW

Dept. of Agriculture for Northern Ireland
Fisheries Division
Hut 5, Castle Grounds
Stormont
Belfast, BT4 3TA