

FABRICATION AND SETTING UP OF AQUARIUMS

CHAPTER 1: FABRICATION OF AQUARIUM

2.1.1 Introduction

Ornamental fish tank is otherwise called an aquarium. An aquarium is a set up in which ornamental fishes of aesthetic value are displayed for recreation.

2.1.2 Different types of ornamental fish tanks

Aquarium can be made of materials like glass, concrete, wood, fiberglass acrylic sheet etc., depending on its location, cost and durability.

Glass tank

They are either all glass tanks or metal framed ones. In the metal (steel or iron) framed tanks glass panels are held in place with putty (battery compound). On the other hand in all glass tanks, glass walls are fitted together edge-to-edge using silicone rubber adhesive. Nowadays, all-glass tanks have completely vanished due to the popularity of metal-framed tanks, which are known for their slim appearance and suitability for keeping marine fishes also.

Shape of aquarium tanks

The shape of the aquarium tank may be circular, square, rectangular, oval, hexagonal or octagonal. However, rectangular tanks are preferred as they provide sufficient area for free swimming of the fishes.

2.1.3 Materials required for construction of tank

Silicon gel
Squeezing gun
Glass panes (5 no's) with required size

2.1.4 Construction of all glass aquarium tank

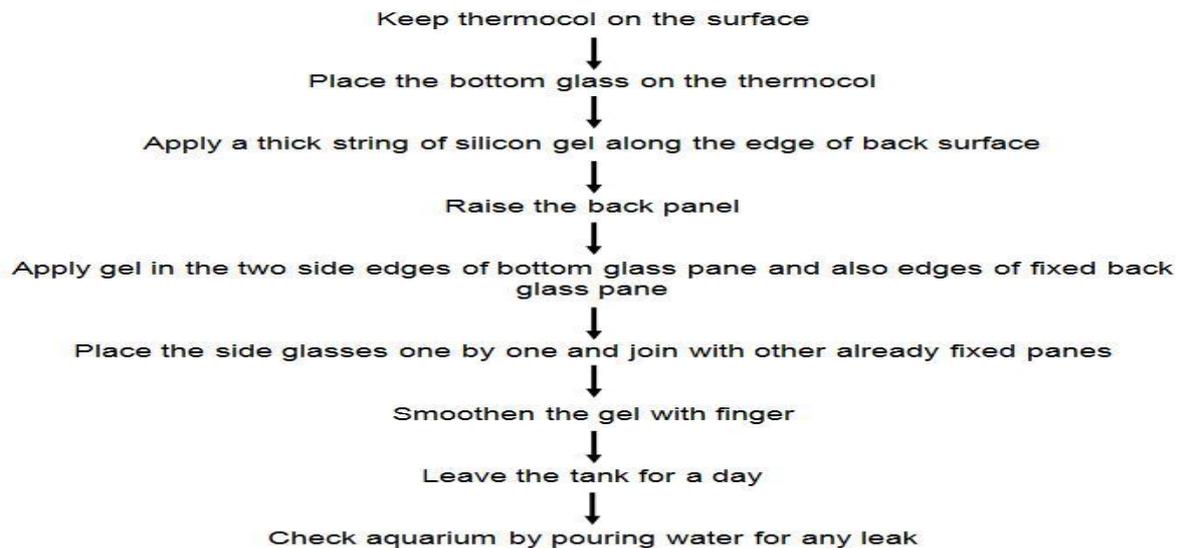
These are constructed with only glass sheets. Rectangular all glass tanks are made with a glass wall thickness of 5 – 10 mm. In all glass tanks, the cut glass walls are fitted together with synthetic rubbery sealant called silicone gum. Prior to fabrication of the tank, sidewalls of the tank are arranged so as to have the desired shape. The glass walls are tied with a rope in order to keep the correct shape of the tank. Then the bottom sheet of the tank is kept flat below the arranged sidewalls so as to get the desired and correct shape of the tank. A cut thermocol sheet is kept at the bottom to rest the temporarily tied glass sheets. Now the silicone sealant is evenly applied all along the inner vertical and horizontal cut ends with the help of a hand applicator. Care must be taken to see that the joining ends of the glass pieces are free of oil, moisture or stains. A good sealant compound binds the glass walls in 10 to 20 minutes. However, a curing time of about 10 hrs is required to keep the set tank in position and water should be poured only after 24 hours.

Seating the tank

Soon after curing, the tank is kept on a firm wooden or slotted iron stand. The base of the stand should be even and smooth, as irregular placing of the stands would break the tank bottom. A uniform sized thermocol is also used in between the tank and stand surface to safeguard the tank from pressure.

2.1.5 Method of construction of all glass tanks(flow chart)

METHOD OF CONSTRUCTION OF ALL GLASS TANKS (FLOWCHART)



CHAPTER 2 : SETTING UP OF AQUARIUM

2.2.1 Setting up of aquarium

Setting up of an aquarium is otherwise called aquascaping. Aquascaping of an aquarium has two purposes.

- To make the bare tank more attractive for the viewer.
- To simulate natural environment by keeping aquatic plants, rocks, gravels, etc.

Choosing a location

The tank should be set up in an attractive and convenient place, which should be free from direct sunlight. Aquarium can be set up in home, hospitals, restaurants, hotels and other public places. The aquarium should stand on a very firm base in order to avoid jerking and toppling.

2.2.2 Steps involved in setting up of aquarium

i) Fitting an under gravel filter

The purpose of the filter is to remove dirty materials from the aquarium. Under gravel filters are otherwise called as biological filters. Toxic substances like ammonia and nitrite are converted to relatively harmless substances like nitrate by the beneficial bacteria developed on the gravel added in the biological filter.

ii) Adding the gravels

Gravels with a particle size of 3-5 mm are used to allow good water circulation and to enable the plants to root.

iii) Installing the air pump

Air pump is installed to operate biological filter for airlifting and aeration.

iv) Adding rocks

Suitable rocks are firmly laid down on the gravel. The rocks are grouped for creating natural look. Several rock pieces can be stuck together with silicon gel to make a cave like structure, which is essential for maintaining cichlid fishes.

v) Filling the tank

Tank can be filled with water through hose pipe directed over a rock in order to avoid displacement of gravels.

vi) Keeping plants

Tall plants are kept at the back and sides. The corners are filled with short species. The roots are buried in the gravel.

vii) Putting the cover glass into position

Cover glass or plastic sheet are used to cover the top. This type has cutouts for cables and for feeding access.

viii) Fitting the electrical wiring

Electrical wiring with respect to light and filters are properly connected.

ix) Setting up the hood and lighting

This is the last stage before introducing the fishes. Fluorescent tubes are used which is fitted inside the hood. The hood may be made of metal, wood or fiberglass sheets.

x) Adding the fishes

Companionable and compatible fishes are introduced in order to avoid fighting between the fishes.

The recommended stocking density of fishes in ornamental fish tank is given below. Surface area of the tanks is taken into consideration for calculating stocking density.

Tropical freshwater species

For 1 cm length of fish, 30cm² surface area is required.

Freshwater (Cold water) species

For 1 cm length of fish, 75cm² area is required.

2.2.3 Introduction care

The newly purchased fishes should not be released into the aquarium tank immediately. The transported polythene bags containing live fishes should be first placed in the tank water so that the water temperature in the bag as well as in the tank water becomes equal. Then the small quantity of tank water may be mixed with that of the polythene bag and this may be kept for about 15 minutes so that the fish would acclimatize to the new water environment. Subsequently the fishes are transferred into the new tank by using hand nets. Immediate feeding of fishes after stocking in the tank should be avoided.