

6.2. Size : After fabrication, there are no scope for dimension change, so no of fishes and size of fishes to be kept (Larger area less stress of fishes) always look into.

Better to go large tank as water quality parameters will more fluctuate in small tanks. Shallow and wide tanks are preferable as they have more surface area and accommodate more fish compare to lesser surface area having equal quantity of water.

Length will be twice as long as its depth and height. Ideal Length : Height: width is 3:2:2 (60:30:30 cm).

6.3. Shape : Based on the available types and shapes preference is given in all glass rectangular tanks. This is because rectangular tanks proportionate size provides an elegant look and firmness for handling.

7. Fabrication of all glass home aquarium tank:

For construction of an all glass home aquarium no frame or cemented materials are required. It can be constructed within a short time. To prevent leakage the dimensions of glass panes should be as per recommendations.

First all, the glass panes are grinded using a grinding stone. For cleanest possible result & professional finish, masking tap is used. Then bottom glass pane is laid on a hard board then the side, front and back glass panes are stuck to the bottom panes using silicon glue sealant. To keep all the glass panes except the bottom one at an angle of 90° they are supported by thread or any other solid objects. The bottom pane is then stuck in the same fashion and made firm by sticking tape. Then the first and second side panels of smaller size are fixed putting glue on its

three edges and firmly fastened with sticking tape, to the bottom as well as side glass panels. The glue dries up quickly and gets solidified as soon as it is exposed to air. Later on the corners of this tank are filled with silicon glue applying pressure by the index finger to fill the gaps. While dispensing the silicon gel on the glass the line of glue should not be broken very frequently, otherwise it may lead to gaps between joints causing leakage. After this the tank is kept free from any disturbances for few hours preferably for one day. If there is any leakage in the tank, the glass panel can be sealed very easily. This is done with the help of a blade wiped with a swab dipped in turpentine oil. Then the leakage area is sealed with glue.

Length (cm)	Width (cm)	Depth (cm)	Capacity (L)	Glass thickness
60	30	30	54	4 mm
90	30	38	103	5 mm
120	30	45	162	6 mm
150	45	60	405	10 mm
180	45	60	486	12 mm

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FABRICATION OF AN AQUARIUM TANK



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Art of rearing and keeping fishes in aquarium is one of the oldest and most popular hobbies of the world next only to photography. Its practice have started in China towards 800 BC with gold fish *Carassius auratus*.

1. WHAT IS AN AQUARIUM : It is a glass sided tank or bowl in which ornamental fishes or living aquatic animals, aquatic plants and decorative materials are kept for beautification of interior rooms.

2. WHAT ARE ORNAMENTAL FISH : It is an attractive colorful fishes of peaceful nature, playful behavior that are kept as pets in confined spaces of an aquarium or a garden pool with the purpose of enjoying their beauty for fun and fancy.

3. ADVANTAGES :

- Give pleasure to the young and old alike.
- No barking/mewing, no biting, no botheration of cleaning.
- Less expensive. - Relaxation of mind.
- Source of self employment by means of culture, supply of accessories, Breeding etc.

4. TYPE OF AN AQUARIUM :

- 4.1. Home aquarium : Made for keeping small sizes fishes for decorative purposes in office, hotels, shops etc.
- 4.2. Public aquarium : Made for public exhibition and keeping many larger and more exotic fishes.

5. ACCESSORIES :

5.1. Glass and Plastic : Both are used but glass tanks are more common.

5.2. Sealant with Gun : Universal Silicon sealant is used which forms a flexible rubber and remains flexible for years.

5.3. Cover : Aquarium is not complete without a cover made up of non plywood or colourful plastic sheets. Apart from preventing the escape of fish from aquarium, it also helps in circulation of free air. Other uses of a cover are - slows water loss by evaporation, prevents the entry of dust and other foreign bodies, support living system. Normally wide silt with mesh cover is left on the sides of aquarium hood for aeration.

5.4. Lamp : Light bulb(s) or fluorescent tube (stimulate photosynthesis) of about 25 W are attached with cover leaving the gap 4-6 inch above the water level. Atleast 10-12 hrs of light is needed. It is also necessary to give a ventilation to minimize the buildup heat.

5.5. Stand : Made up of Wooden/Metallic structure should be strong enough to load of entire set and kept at height of 2.5 ft.

5.6. Filter : Important for type and quantity of fish to keep, amount of maintenance that system will require.

Ammonia is highly toxic to fishes (*Ammonia beyond 0.45 mg/L is toxic lead to losses the ability to combine with oxygen by haemoglobin of blood.*). It is reported that aquarium fish may excrete ammonium 0.3-4.0 gm/kg /day. It is known to increase 10 times at an increase of 1 unit in pH. So, it is necessary to oxidize the toxic ammonia to nitrite (NO₂) and subsequently to nitrate (NO₃) which is non toxic up to 400 mg/L to fish and usually as a nutrient by the plant.

5.6.1. Mechanical filter is used to remove the particulate matter mechanically. eg Filter floss, Plastic foam.

5.6.2. Chemical filter is used to remove the particulate matter by chemical media. eg lime rich material, resins etc.

5.6.3. Biological filter is used to remove the particulate matter by use of bacteria into less toxic. eg under gravel filter

5.7. Aerators / Air pumps : Used to force air into tank which agitates the water surface allowing better exchange of CO₂ and O₂.

5.8. Heater : Tropical aquarium temp should be 18-29 C.

5.9. Gravel and Sand : Use to provide natural look, hold rooted natural aquatic plant and substrate for proliferation of useful bacteria. Cover the bottom with clean sand about 2.5 cm thick.

5.10. Plants : Used to give natural appearance, oxygenate the water, provide shelter for fishes, facilitate spawning, food etc.

5.11. Decorative : Background posters, toys, rocks, caves, shells, corals, drift wood etc are used to decorate aquariums and also place to hide.

6. Aquarium Designing: While designing, following factor should be remembered -

6.1. Cost : Fabrication and maintenance cost should be considered.