

Design Resource

Brass Casting, Panaji - Goa

Metal casting artwork

by

Prof. Bibhudutta Baral, Divyadarshan C. S. and

Sandhya B

NID, Bengaluru

Source:

<https://www.dsource.in/resource/brass-casting-panaji-go>



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Introduction

Goa being a tourist place attracts people, for its beauty of the place itself. Visitors drive for its beaches, forts, churches and scenic beauty. Mapusa is a small city in North Goa, India. It is situated 13km north of the capital Panaji. Its proximity to many beaches makes it a suitable base during the tourist season (November to April). The Friday markets are quite known. People from surrounding areas of Mapusa come and sell their wares unlike some of the tourist-oriented fairs or markets. Goa is a place with diverse people.

Metals are an essential part of human lives and are used in many ways possible. Earlier it was used as weapons at pre-historic times and as the evolution of man began the use and the alteration of metals also was initiated. Metals are used in the form of utensils, and more; the uses of metals are enormous. Brass is one of the metals, a yellowish alloy of copper and zinc, harder than copper and is a good electrical conductor. Brass is vulnerable to stress corrosion cracking from substances releasing ammonia or ammonia itself. This is sometimes called as sea-son cracking. There are types of brass and brass alloys according to proportions of Copper and Zinc combined.

Brass is used for its bright gold-like appearance and for its applications where low friction is required such as locks, bearings, doorknobs, valves, and in brass instruments such as horns and bells. It is also used in zippers. Since it is a good electrical conductor it must be used in circumstances in which sparks not be struck. Brass metal is a craft passed on from one generation to another and practiced on hereditary basis. The items that are produced include oil lamps in different designs, candle stands, temple towers, church bells, ashtrays and more.



The molten metal is transferred to the pouring area where the molds are filled.

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Artisan involving in doing grinding in electric grinding machine



Neat and smooth finished Brass Deepam products.



Different types of brass casting products photos are displayed on display board.

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Tools and Raw Materials

The tools and raw materials that are used for brass castings are as follows:

- **Buffing Machine:** This machine helps to give a finished look to the products.
- **Box Frames:** Box frames help to hold the sand mixture firmly.
- **Cutter:** To make pathway in the box molds.
- **Soil Dab:** To press the soil firmly in box molds.
- **Soil:** Two or three soils are mixed together to form sand mold.
- **Chalk Powder:** Chalk powder is used to keep soil from sticking to the design patterns.
- **Design Pattern:** A ready symmetrical pattern that is used in preparation of molds.
- **Sieve:** To separate bigger grains to get fine soil.
- **Waste Metal Items:** Waste metals are melted to use for the cast.
- **Hammer:** Hammer is used to break coal.
- **Pincers:** Pincers are used to hold crucibles.
- **Iron/Steel Rod:** Iron rods are used as support while filling molten metal.
- **Furnace:** The melting of metals in crucibles is done.
- **Crucible:** The crucible holds the molten metal.
- **Coal:** Coal is used to produce heat to melt the metals.
- **Brass Metal:** The metal cast
- **Electrical Blow Machine:** This machine helps to increase the fire at furnace.
- **Clay:** Clay is used in sand mixture and is a binding agent.
- **Wooden Planks:** Wooden planks cover the mold box and retain the sand firm.

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Soil and Jungle soil mixture is basically used for mold making.



Sieve is used to get fine soil.



Wooden pattern plank board.



Box frames helps to hold the soil mixture firmly.

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Box Frames after combining.



Old brass metal items used for recycle the metal.



Electric air blower used to blow the air to custom made furnace.

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Pincers are used to hold crucibles and other comfortable needs.



Custom made wooden hammer used to break the bigger grains to get fine soil.

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Iron rod and Hammer are used for support and to break coal and old metal while doing recycling.



Grinding machine is used to give a finished look to the products.



Soil dab is used to press the soil firm in box molds.

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Making Process

The brass casting that is done in Goa is called as 'sand casting' where the casting process happens by the use of sand molds, so the term sand casting will refer to the casting done through sand casting process. Most of the complex metal castings are done in this method. It is comparatively cheap and sufficiently refractory hence this method mostly is used in brass casting small-scale industries. To carry out the process of brass casting – Preparation of molds and needed tools and materials has to be kept handy. First the model to cast is done and then molds are designed after which metals are melted and poured into the molds to get the castings.

Preparation of Molds:

The molds are formed of desired even shape of a desired part. To create a mold – two or three kinds of soil (jungle soil) are mixed together along with a suitable bonding agent (usually clay). The wooden plank with design pattern is placed on ground, chalk powder is sprinkled on top of the design so that the sand mixture doesn't hold onto it and the mold frame is placed on the plank, it is tightly filled with sand mixture and covered with another wooden plank on top. The wooden plank with the design pattern is below so it is turned upside down. The wooden plank is removed leaving the pattern in sand. Chalk powder is sprinkled on it and another box frame is placed tightly filling it with sand later. The box is covered with plain wooden plank after filling with sand. There are two box frames along with the pattern still inside. The first frame is slowly lifted and kept aside. The pattern is taken out and the two box frames are put back together after making a pathway for the molten metal to pass and is kept aside. In the same way number of molds are made for bulk production.

Brass Casting:

Once the mold is ready the furnace is set up and the metals are melted in a crucible in a furnace. It takes about twenty minutes for small amount of metal to melt. Once it is melted the bigger grains and dust are removed. The crucible is held with tongs and carried to the molds. The molds are filled with molten metal. Castings are taken out after cooling the molds for few minutes. The castings are separated from sand and placed in water. The castings are buffed and polished to give a finished look.

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Converting rough soil into soft powder using custom made wooden tool.



Proper mixing of soil and jungle soil for mold.



The wooden plank with pattern is placed on ground.



The mold frame is placed on the wooden plank.

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Filling the mixed soil on top of wooden plank.



Artisan tightening the soil mixture using round head wooden soil dab.



The box is covered with plain wooden plank after filling with soil mixture.



Chalk powder is sprinkled on top of the design so that the soil mixture doesn't hold onto it.

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Making a pathway for the molten metal to pass by using custom made cutter.



Artisan is carefully taking out the pattern ring after making a pathway.



The pattern is taken out and the two box frames are carefully put back together for casting.



Finally molds are ready for casting.

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Breaking into a small pieces of stone coal by using a hammer for furnace.



Artisan is heating the old brass metal for its easy to crushing.



Crushing the old brass metal using hammer to recycle the metal.



Artist involved in melting old metal in crucible by using custom made furnace.

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After 30 to 40 minutes the crucible is taken out carefully by using pincer.



The crucible is held with tongs and carried to the molds for casting.



Pouring melted brass/Casting through the gating system.



The molds are filled with molten metal and kept for cooling.

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Castings are taken out after cooling the molds.



The castings are separated from mold by using pincer.



Removing the unwanted mold from solidified casting.



The solidified castings are separated from mold and dropping inside the cold water.

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The solidified castings are placed in cold water for cooling.



Final solidified castings ready for final finishing.

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Products

There are wide arrays of brass products, eccentric and spectacular which include brass candle stands, decorative candle stands, brass fruit bowls, brass wall hangings, brass hardware items, brass incense burners, brass Urns and more to add to the list.



Brass wall hangings.

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Plain brass Deepam for home decor.



Brass Deepam with a unique design for home decor.

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Different and unique designs of brass Deepam and other products.



There are wide arrays of brass products.



Decorative Deepam stand and brass incense burner.

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Brass idols.

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Video



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