CEREMIC ARTS

1. INTRODUCTION:

Ceramic art is art made from ceramic materials, including clay. It may take forms including art ware, tile, figurines, sculpture, and tableware. Ceramic art is one of the arts, particularly the visual arts. Of these, it is one of the plastic arts. While some ceramics are considered fine art, some are considered to be decorative, industrial or applied art objects. Ceramics may also be considered artifacts in archaeology. Ceramic art can be made by one person or by a group of people. In a pottery or ceramic factory, a group of people design, manufacture and decorate the art ware. Products from a pottery are sometimes referred to as "art pottery". [1] In a one-person pottery studio, ceramists or potters produce studio pottery.

Most traditional ceramic products were made from clay (or clay mixed with other materials), shaped and subjected to heat, and tableware and decorative ceramics are generally still made this way. In modern ceramic engineering usage, ceramics is the art and science of making objects from inorganic, non-metallic materials by the action of heat. It excludes glass and mosaic made from glass tesserae.

There is a long history of ceramic art in almost all developed cultures, and often ceramic objects are all the artistic evidence left from vanished cultures. Elements of ceramic art, upon which different degrees of emphasis have been placed at different times, are the shape of the object, its decoration by painting, carving and other methods, and the glazing found on most ceramics.

2. PRODUCT & ITS APPLICATION:

Ceramic arts have very ancient history and developed all over the world. In India have very good scope, as the artisans are available at very low cost. Some of the international type of ceramic arts are Surface treatments, China painting, Slipware, Terra sigillata, Forms, Tile, Figurines, Terracotta (artworks). Studio

pottery is pottery made by amateur or professional artists or artisans working alone or in small groups, making unique or short runs. Typically, all stages of manufacture are carried out by the artists themselves. Studio pottery includes functional wares such as tableware, cookware and non-functional wares such as sculpture. Studio potters can be referred to as ceramic artists, ceramists, ceramicists or as an artist who uses clay as a medium. Much studio pottery is tableware or cookware but an increasing number of studio potters produce non-functional or sculptural items. Some studio potters now prefer to call themselves ceramic artists, ceramists or simply artists. Studio pottery is represented by potters all over the world.

3. DESIRED QUALIFICATIONS FOR PROMOTER:

Graduate in any discipline. , Must have better knowledge of art work.

4. INDUSTRY LOOK OUT AND TRENDS

Ceramics also known as fire clay is an inorganic, non-metallic solid article, which is produced by the art or technique of heat and subsequent cooling. Ceramics is a diverse industry and contains several categories of products, including sanitary ware, refractories, cement, advanced ceramics and ceramic tiles. Ceramic products like crockery, sanitary ware, tiles etc. play a very important role in our daily life. This is because, apart from their decorative look, ceramic products are primarily hygiene products. This is also one of the chief reasons for their wide usage in bathrooms and kitchens in modern households to medical centres, laboratories, milk booths, schools, public conveniences etc. The ceramic industry has a long history, with the first instance of functional pottery vessels being used for storing water and food, being thought to be around since 9,000 or 10,000 BC. Clay bricks were also made around the same time. The ceramic industry has been modernising continuously, by newer innovations in product design, quality etc.

5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY:

There is a long history of ceramic art in almost all developed cultures, and often ceramic objects are all the artistic evidence left from vanished cultures, like that of the Nok in Africa over 2,000 years ago. Cultures especially noted for ceramics include the Chinese, Cretan, Greek, Persian, Mayan, Japanese, and Korean cultures, as well as the modern Western cultures. Prehistoric pottery, Ceramics as wall decoration, is developed in East Asia, Cambodia, China, Japan, Korea, Western Asia and the Middle East.

In India, both common tableware and studio pottery have very good opportunity

6. RAW MATERIAL REQUIREMENTS:

Different types of clay, when used with different minerals and firing conditions, are used to produce earthenware, stoneware, porcelain, and bone china (fine china).

Earthenware is pottery that has not been fired to vitrification and is thus permeable to water. Many types of pottery have been made from it from the earliest times, and until the 18th century it was the most common type of pottery outside the far East. Earthenware is often made from clay, quartz and feldspar. Terracotta, a type of earthenware, is a clay-based unglazed or glazed ceramic, where the fired body is porous. Its uses include vessels (notably flower pots), water and waste water pipes, bricks, and surface embellishment in building construction. Terracotta has been a common medium for ceramic art.

Stoneware is a vitreous or semi-vitreous ceramic made primarily from stoneware clay or non-refractory fire clay. Stoneware is fired at high temperatures. Vitrified or not, it is non-porous; it may or may not be glazed. One widely recognized definition is from the Combined Nomenclature of the European Communities, a European industry standard states "Stoneware, which, though dense, impermeable and hard enough to resist scratching by a steel point, differs from porcelain because it is more opaque, and normally only partially vitrified. It may

be vitreous or semi-vitreous. It is usually colored grey or brownish because of impurities in the clay used for its manufacture, and is normally glazed. Porcelain is a ceramic material made by heating materials, generally including kaolin, in a kiln to temperatures between 1,200 and 1,400 °C (2,200 and 2,600 °F). The toughness, strength and translucence of porcelain, relative to other types of pottery, arise mainly from vitrification and the formation of the mineral mullite within the body at these high temperatures. Properties associated with porcelain include low permeability and elasticity; considerable strength, hardness, toughness, whiteness, translucency and resonance; and a high resistance to chemical attack and thermal shock. Porcelain has been described as being "completely vitrified, hard, impermeable (even before glazing), white or artificially colored, translucent (except when of considerable thickness), and resonant." However, the term porcelain lacks a universal definition and has "been applied in a very unsystematic fashion to substances of diverse kinds which have only certain surface-qualities in common"

Bone china (fine china) is a type of soft-paste porcelain that is composed of bone ash, Feld spathic material, and kaolin. It has been defined as ware with a translucent body containing a minimum of 30% of phosphate derived from animal bone and calculated calcium phosphate. Developed by English potter Josiah Spode, bone china is known for its high levels of whiteness and translucency, and very high mechanical strength and chip resistance. Its high strength allows it to be produced in thinner cross-sections than other types of porcelain. Like stoneware it is vitrified, but is translucent due to differing mineral properties. From its initial development and up to the later part of the twentieth century, bone china was almost exclusively an English product, with production being effectively localized in Stoke-on-Trent. Most major English firms made or still make it, including Minton’s, Coal port, Spode, Royal Crown Derby, Royal Dolton, Wedgwood and Worcester. In the UK, references to "china" or "porcelain" can refer to bone china, and "English porcelain" has been used as a term for it, both in the UK and around the world. Fine china is not necessarily bone china, and is a term used to refer to ware which does not contain bone ash.

7. MANUFACTURING PROCESS:

The Red burning Plastic clays are weathered and mixed with water allowed to age for about a week. These clays are then crushed and mixed homogeneously by use of wooden hammer. Wet clay is placed in potter's wheel to give the clay shape. The moulded products are carefully collected on wooden plants and allowed to dry in sheds. Then these are dried in Sun again. When these clay-wares are dry these are burned in coal fired up draft kiln to 600 C to 700 C so that partial vitrification takes place and products get a pleasing light red color. In case of water Filter the two parts are cast in Moulds and dried in shade before burning. After burning the top part in filled with Water-Filter-Candle and placed over the bottom part.

Process Flow: Weathering of Clay Mixing Water Ageing Pugging Moulding Drying Casting burning Cooling Finishing.

8. MANPOWER REQUIREMENT:

The unit will provide employment to the 6 persons and all of whom are locally available.

Sr. No.	**Designation of Employees**	**Monthly Salary ₹**	**Number of employees required**				
			Year-1	Year-2	Year-3	Year-4	Year-5
1	Machine Operators	12,000	1	1	1	1	1
2	Helpers@ Rs. 8000	24000	3	3	3	3	3
1	Production supervisor	15,000	1	1	1	1	1
2	Accounts/Stores Asset	12,000	1	1	1	1	1
3	Office Boy	9,000	0	0	0	0	0
	Total	72000	6	6	6	6	6

9. IMPLEMENTATION SCHEDULE:

The project can be implemented in 3 months' time as detailed below:

Sr. No.	**Activity**	**Time**

		Required (in months)
1	Acquisition of premises	1.00
2	Construction (if applicable)	
3	Procurement & installation of Plant & Machinery	2.00
4	Arrangement of Finance	2.00
5	Recruitment of required manpower	1.00
	Total time required (some activities shall run concurrently)	3.00

10. COST OF PROJECT:

The project shall cost ₹ 4.39 lacs as detailed below:

Sr. No.	**Particulars**	**₹ in Lacs**
1	Land	-
2	Building	-
3	Plant & Machinery	1.56
4	Furniture, Electrical Installations	078
5	Other Assets including Preliminary / Pre-operative expenses	0.05
6	Working Capital	2.00
	Total	4.39

11. MEANS OF FINANCE:

Bank term loans are assumed @ 75 % of fixed assets. The proposed funding pattern is as under:

Sr. No.	Particulars	₹ in Lacs
1	Promoter's contribution	1.14
2	Bank Finance	3.25
	Total	4.39

12. WORKING CAPITAL CALCULATION:

The project requires working capital of ₹ 2.00 lacs as detailed below:

Sr. No.	Particulars	Gross Amt	Margin %	Margin Amt	Bank Finance
1	Inventories	0.50	25	0.12	0.38
2	Receivables	1.00	25	0.25	0.75
3	Overheads	0.50	100	0.50	0.00
4	Creditors	-		-	-
	Total	2.00		0.87	1.13

13. LIST OF MACHINERY REQUIRED:

Sr No	Name and description	Amount
1.	Two Potter's wheel	Rs. 35,000/-
2	One Up- draft coal fired kiln of 5 diameter	Rs.45, 000/-
3	Wooden pallets, planks, Misc. hand tools	Rs.55, 000/-
4	3 moulds for water filter	Rs.21, 000/-

All the machines and equipment are available from local manufacturers. The entrepreneur needs to ensure proper selection of product mix and proper type of machines and tooling to have modern and flexible designs. It may be worthwhile to look at reconditioned imported machines, dies and tooling. Some of the machinery and dies and tooling suppliers are listed here below:

- Kamdhenu Agro Machinery
  Plot No. 6, Near Power House,
  Wathoda Road, Wathoda
  Nagpur - 440035
  Maharashtra, India

- Future Industries Private Limited
  Shed No. 15, Ambica Estate,
  Corporation Municipal Plot,
  Opposite Sadvichar Hospital,
  Naroda, Ahmedabad - 382330,

Gujarat, India

- The Global Pharma Equipments
  Star Industrial Estate,
  D-32, Naik Pada,
  Near Hanuman Mandir,
  Opposite Dwarka Industrial Estate,
  Vasai East, Vasai - 401208,
  Maharashtra, India

14. PROFITABILITY CALCULATIONS:

The unit shall operate for single shift of 8 hours per day for 300 working days per annum to have an annual installed capacity to produce the following:

Sr No	Name & Description	Unit	Cost/Unit	Amount
1	Routine type ceramics:	25000 nos.	Rs. 20-50	Rs.8, 00,000/-
2	Small size art pieces:	500 nos.	Rs. 1000-2000	Rs.7, 00,000/-
3	Medium Size art pieces:	10 Nos.	Rs. 10000	Rs.1, 00,000/-
4	Special Art work high quality pieces	4 Nos.	Rs. 100000	Rs.4, 00,000/-

Five Year Projection:

Sr. No.	Particulars	UOM	Year-1	Year-2	Year-3	Year-4	Year-5
1	Capacity Utilization	%	60%	70%	80%	90%	100%
2	Sales	₹. In Lacs	12.00	14.00	16.00	18.00	20.00
3	Raw Materials & Other direct inputs	₹. In Lacs	10.87	12.68	14.49	16.30	18.12
4	Gross Margin	₹. In Lacs	1.13	01.32	1.51	1.70	01.88
5	Overheads except interest	₹. In Lacs	0.15	0.15	0.17	0.18	0.19

6	Interest	₹. In Lacs	0.35	0.35	0.30	0.27	0.15
7	Depreciation	₹. In Lacs	0.25	0.22	0.20	0.18	0.15
8	Net Profit before tax	₹. In Lacs	0.38	0.40	0.84	1.07	1.39

The basis of profitability calculation:
The growth of selling capacity will be increased 10% per year. (This is assumed by various analysis and study; it can be increased according to the selling strategy.)

Energy Costs are considered at Rs 7 per Kwh and fuel cost is considered at Rs. 65 per litre. The depreciation of plant is taken at 10-12 % and Interest costs are taken at 14 -15 % depending on type of industry.

15. BREAKEVEN ANALYSIS:

The project shall reach cash break-even at 18.08 % of projected capacity as detailed below:

Sr. No.	Particulars	UOM	Value
1	Sales at full capacity	₹. In Lacs	20.00
2	Variable costs	₹. In Lacs	18.12
3	Fixed costs incl. interest	₹. In Lacs	0.34
4	BEP = FC/(SR-VC) x 100 =	% capacity	18.08

16. STATUTORY / GOVERNMENT APPROVALS

As per the allocation of business rules under the Constitution, labour is in the concurrent list of subjects. It is dealt with by the MOLE at the Central and Departments of Labour under State Governments in respective States / UTs. The MOLE has enacted workplace safety and health statutes concerning workers in the manufacturing sector, mines, ports and docks and in construction sectors.

Further, other Ministries of the Government of India have also enacted certain statutes relating to safety aspects of substances, equipment, operations etc. Some of the statutes applicable in the manufacturing sector are discussed below:

The Static and Mobile Pressure Vessels (Unfired) Rules, 1981

These (SMPV) Rules are notified under the Explosives Act, 1884. These rules regulate storage, handling and transport of compressed gases. These rules stipulate requirements regarding construction and fitments, periodic testing, location, fire protection, loading and unloading facilities, transfer operations etc. in respect of pressure vessels whose water capacity exceeds one thousand litres. These rules are enforced by the Chief Controller of Explosives under the Ministry of Industry and Commerce, Govt. of India (PESO).

The Manufacture, Storage and Import of Hazardous Chemicals Rules (MSIHC), 1989

These MSIHC Rules are notified under the Environment (Protection) Act, 1986. These rules are aimed at regulating and handling of certain specified hazardous chemicals. The rules stipulate requirements regarding notification of site, identification of major hazards, taking necessary steps to control major accident, notification of major accident, preparation of safety report and on-site emergency plan; prevention and control of major accident, dissemination of information etc. These rules are notified by the Ministry of Environment and Forests (MOEF) but enforced by the Inspectorates of Factories of respective States / UTs in the manufacturing sector.

The Factories Act, 1948 and State Factories Rules

The Factories Act, 1948 is very comprehensive legislation dealing with the matters of safety, health and welfare of workers in factories. The Act places

duties on the occupier to ensure safety, health and welfare of workers at work. Some of the salient provisions of the Act include:

- Guarding of machinery
- Hoists and Lifts; Lifting Machines and Appliances
- Revolving Machinery
- Pressure Plant
- Excessive Weight
- Protection of Eyes
- Precautions against dangerous fumes, gases etc.
- Explosive or inflammable dust, gas etc.
- Precautions in case of fire
- Safety of buildings and machinery
- Permissible limits of exposure of chemical and toxic substances
- Entrepreneur may contact State Pollution Control Board where ever it is applicable.

17. BACKWARD AND FORWARD INTEGRATIONS

Chemical companies often become integrated and undergo other activities outside the chemical industry. Increased competition prompts many companies to reduce supply chain costs by looking outside the chemical sector at suppliers and customers. While most companies within the chemicals sector primarily produce chemicals, some companies also conduct other manufacturing activities. The exact proportion of chemicals sector companies that are integrated with other sector activities is unknown, but many companies actively seek vertical integration. Many manufacturers pursue vertical integration to secure suppliers and customers for their products.

Mergers and acquisitions are a common way for companies to undertake new chemical ventures. By purchasing their chemical suppliers, some manufacturers secure future chemical feedstock for their products or other chemicals that they use in manufacturing. The company making the purchase obtains valuable expertise and equipment. Some mining and petrochemical production is more

cost-effective when integrated within a chemical company.

Energy and feedstock costs are often a significant expense for chemical companies. Integrating chemical production with activities that secure supplies of chemical feedstock and energy is relatively common as chemical companies grow. Chemical companies are located near mines, oil fields, ammonia factories and water supplies. This reduces transportation costs and increases the reliability of supplies by reducing the distance between feedstock and the factory.

Some companies, such as Sino-Coking Coal and Coke Chemical Industries Incorporated, own their mines. BHP Billiton operates a broad range of mines and is primarily a mining company. It does, however, also produce petrochemical feedstock for the chemical industry and therefore operates within the chemical industry as well. These companies technically operate within both the chemical and mining industries in their normal business operations.

Integrating a chemical company with other activities provides several direct benefits for the company and is becoming increasingly common. High energy costs necessitate greater control of energy resources and minimal reliance on expensive transportation. Chemical companies experience volatile profitability due to fluctuations in feedstock and energy expenses. Some companies control this volatility through careful supply chain management and by charging supply surcharges. Actively researching and developing alternative feedstock and energy supplies helps the company reduce costs.

Vertical integration supports these activities by eliminating redundant activities at multiple companies and increasing efficiency. By consolidating activity among multiple, similar operations, chemical companies achieve cost savings that contribute to higher profitability. End products are often very profitable, and some chemical companies purchase their former customers to take advantage of the marked-up prices of products further along in the supply chain.

Integration may become more common for many chemical companies as competition strengthens and traditional feedstock becomes more expensive.

Market demand for chemical feedstock increases as emerging market economies grow and result in increased consumer spending around the world.

18. TRAINING CENTERS AND COURSES

There is no such training required to start this business but, basic chemical bachelor's degree is plus point for enterpriser. Promoter may train their employees in such specialized institutions to grow up the business. There are few specialised Institutes provide degree certification in chemical Technology, few most famous and authenticate Institutions are as follows:

1. Department of chemical LD college of engineering
   No.120, Circular Road, University Area, Navrangpura,
   Opposite Gujarat University, Ahmedabad, Gujarat 380015

2. MIT College of chemical Engineering, Pune
   Gate.No.140, Raj Baugh Educational Complex, Pune Solapur Highway,
   Loni Kalbhor, Pune – 412201
   Maharashtra, India

Udyamimitra portal (link : www.udyamimitra.in) can also be accessed for handholding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Entrepreneurship program helps to run business successfully is also available from Institutes like Entrepreneurship Development Institute of India (EDII) and its affiliates.

Disclaimer:

Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of

knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.

Source:- Udyami Mitra/Sidbi