CHAPTER VII

INDUSTRIAL APPLICATIONS OF SAURASHTRA FIRECLAYS

Fireclay is widely used in the manufacture of refractories. At the end of 1975, there were about 55 units in India. They constitute 85% of the refractories manufactured and consumed about 70% of the total output of fireclay. Refractories prepared from fireclay are fireclay bricks, Insulating fireclay bricks, pouring pit refractories, Refractory mortars, Ramming mixtures, Plastic fireclay bricks and Castables. The manufacturing process includes mechanical forming or hand moulding and drying and firing in kilns in order to develop the necessary physical and chemical properties. They are extensively used in all places of heat generation such as, boiler furnaces, glass melting furnaces, blast furnaces, reheating furnaces, chimney lining and pottery kilns. They are used in the smelting and refining of Al, Cu, Ni, Zn, Sn and other non-ferrous metals. They play an important role in steam and power generation plants, oil refinaries and chemical plants. In this age of steel, It is not surprising that the largest single use of refractories is the steel industry, with its furnaces,

coke, ovens, open hearth and electric steel plants, finishing mill and foundries.

Besides refractory fireclay is used in structural clay products pottery, Insulating products, Foundries, Refractory cement, Mineral fillers and other Miscellaneous industries.

Gujarat is second largest producer of fireclays in India. Most of the fireclay porduction (> 75%) comes from the Surendranagar and Rajkot districts of Saurashtra. Fireclays in these two districts occurs in all states of purity from best quality to poor quality (saggerclays). Than, in Surendranagar district is the biggest centre having 65 to 70 pottery industries using fireclay as a raw material. 'Parshuram Pottery Works', the largest consumer of fireclay and one of the pioneering unit in Saurashtra, has the biggest pottery works at Than manufacturing crockery and sanitary wares. 'Switch Gear' at Than manufactures fireclay refractories using fireclay from open cast mine near Songadh. There are two more refractory manufacturing units at Than. Insulating products are manufactured at three factories. Rest of all units manufacture pottery products, toys, sanitary wares at Than.

'Digvijay Tiles and Potteries' at Vagadia, Surendranagar district, manufactures Tiles and ceramics using fireclays from their open cast mines at Velala, Khakhrathal, Palacan and Chandralia.

Surendranagar, a district place, has number of ceramic units which use fireclays from opencast mines at Sadala and Palasa. 'Roople Ceramics', a biggest fireclay brick manufacturing unit in Surendranagar district uses fireclay from (Musa Kaladia) open cast mine near Songadh.

Rajkot district has three big centres of fireclay based industrial units.

At Wankaner, a taluka place, 'Parshuram Pottery Works', has the biggest manufacturing unit of glazed and vitreous tiles using fireclays from Than. There are near about 20 units at Wankaner producing fireclay refractories and potteries using fireclays from Ratidevali, Vinaygadh, and Lunsar.

'Parshuram Pottery Works' at Morvi manufactures stonewares, jugs and other domestic utensils from low grade semi-refractory plastic fireclay from their open cast mines at Than, Makansar and Jambudia. Nearly all

types of fireclay refractories and electric insulation products are manufactured in this unit. Fireclay refractories fireclay brick, high alumina refractories, Medium heat duty, and low heat duty with specially ordered refractories are manufactured with their well managed and equipped factory.

Khodiyar Pottery Works at Sihore, a sister concern of Parshuram Pottery Works, is one of the leading manufactures of sanitarywares in India and winner of special National export awards during three successive years, uses fireclays from their opencast mine at Than. Morvi is also an important centre for the manufacture of roofing tibes, from red friable clay from Saltanpur, Jambudia and Paneli mines. Bhadiad Pottery Works and Prajapati Pottery Works have their roofing tile factories at Morvi.

Rajkot is also one of the centres using fireclays for its fireclay based industries.

Besides this some units of refractories and ceramic (potteries) at Ahmedabad, Baroda and Bombay use fireclays from Saurashtra.

At the end of 1975 there were 22 mines in Rajkot district and 29 mines in Surendranagar district,

reported under Minerals Conservation and Development rules, 1958.

Production of fireclay is increasing day by day from these two districts of Saurashtra, so as to meet increasing demand for the fast growing fireclay based industries in Saurashtra, Ahmedabad, Bombay and Baroda.

In Fig. VII.1 at each stage before the final one, there may be obtained both marketable products and partly processed materials. The name of the several 'Manufacturing Processes' employed for making the brick are derived in general from the methods of forming. The most important of these are known as the power press (or Dry press), employed in Parshuram Pottery Work, Morvi with 10% water. At other places Extrusion Process and Hand Molding processes include Air-Ramming and Slipcasting are employed.

Fig. VII.1

A General Outline of the Successive Stages in Production of Refractories followed by most of the Saurashtra Refractory Units.

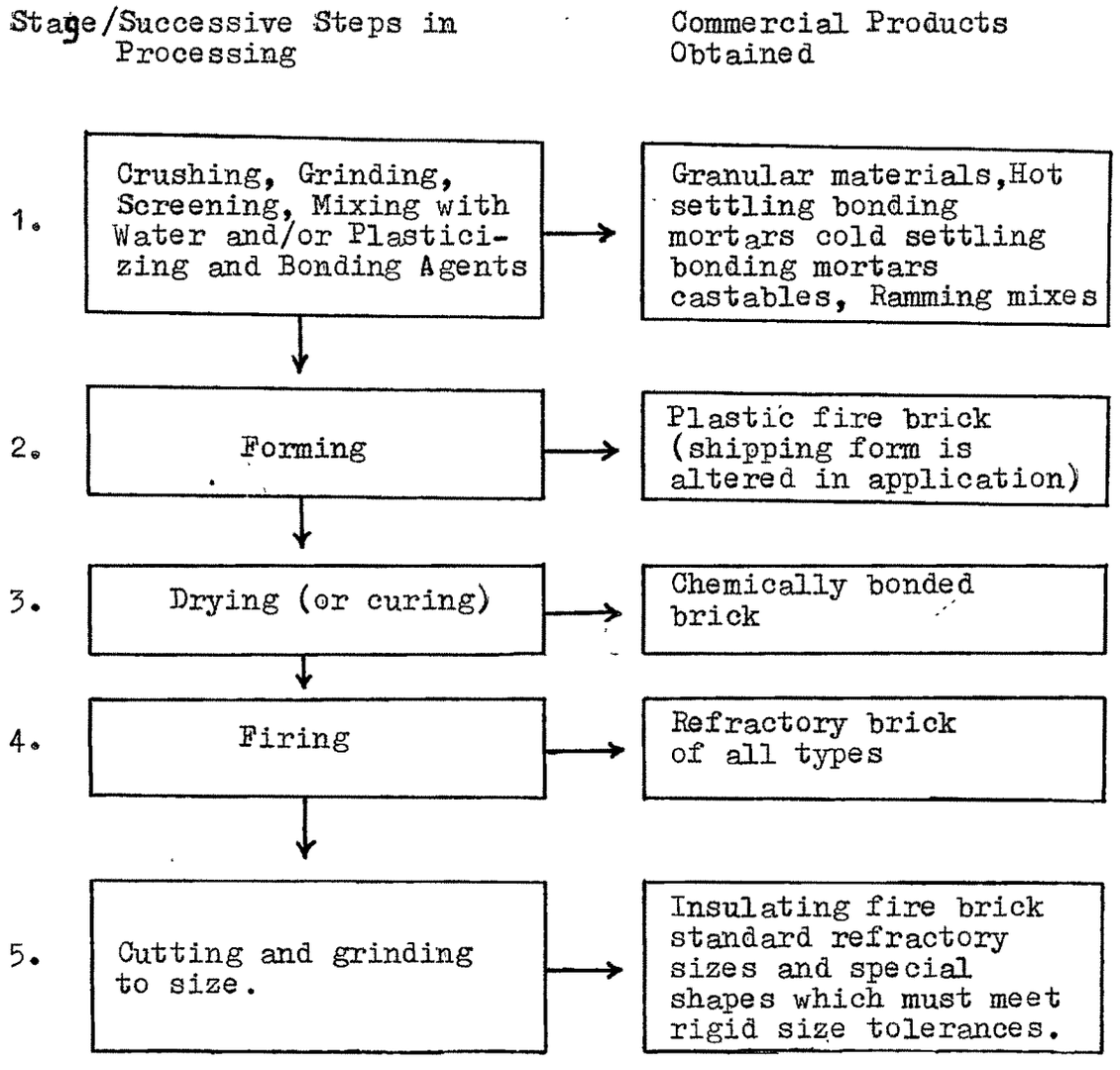


Fig. VII.2.

A Simplified Flow Sheet of Fireclay Brick Manufacturing Unit.

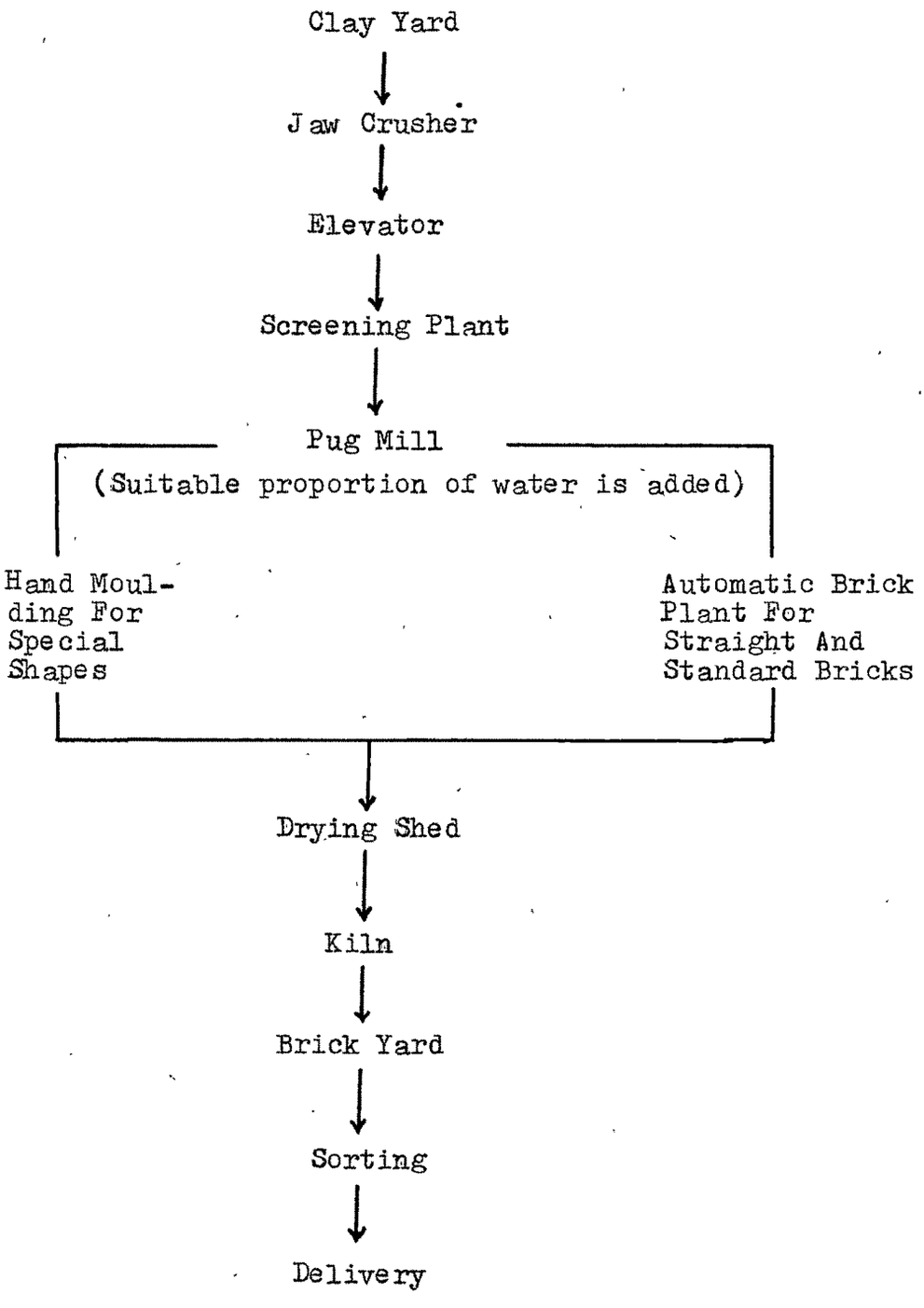
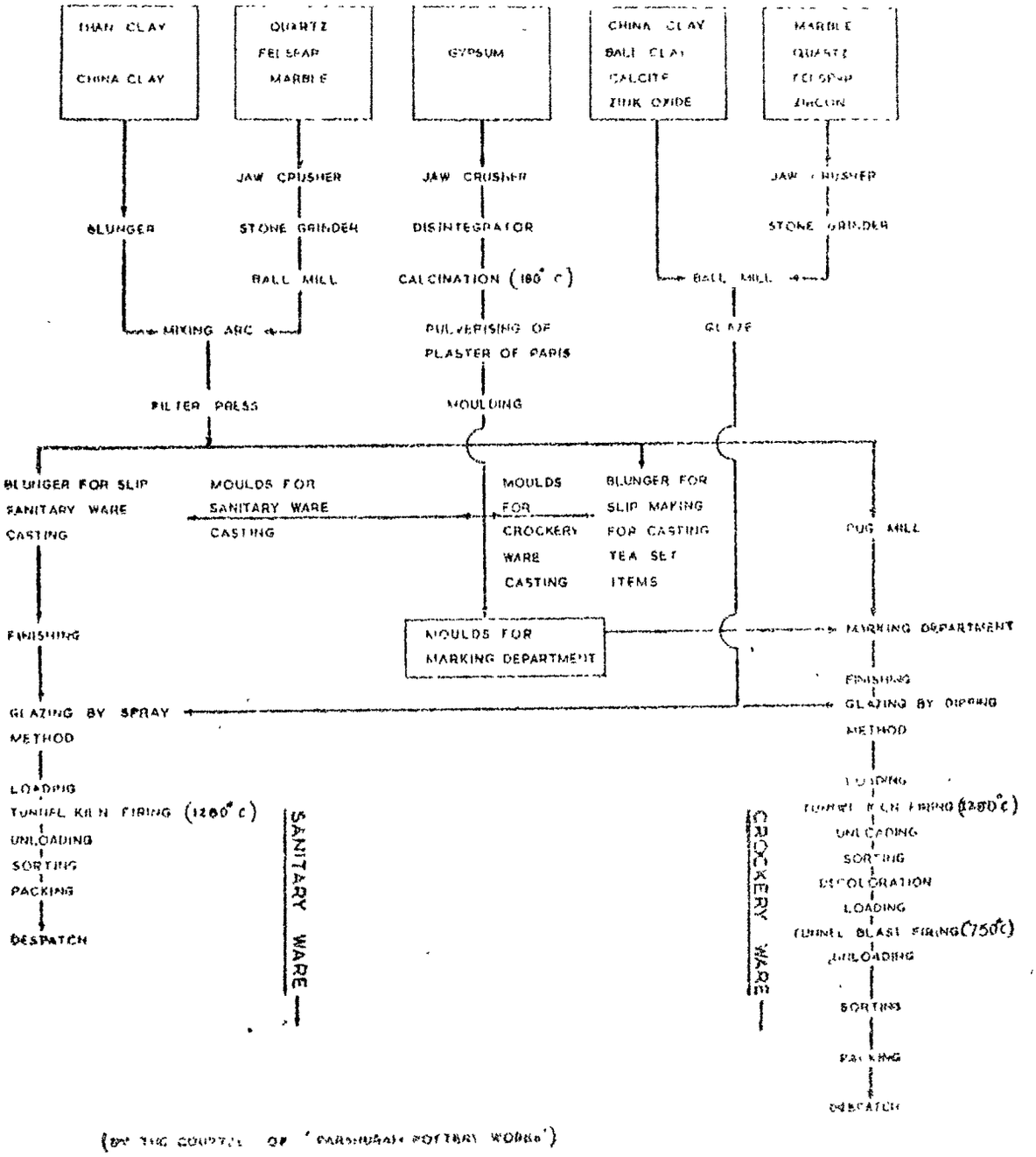


Fig.VII.3

FLOW SHEET OF SANITARY WARE AND CROCKERY WARE



(By the courtesy of 'Parshuram Pottery Works')

TABLE VII.1

Production Data from Mineral Year Book and Mineral Statistics of India.

Year	Surendranagar District		Rajkot District	
	Quantity (Metric Tonne)	Value ('000 Rs.)	Quantity (Metric Tonne)	Value ('000 Rs.)
1968	41,663	182	25,574	108
1969	39,796	169	29,675	140
1970	40,300	159	38,719	190
1971	57,466	262	55,007	296
1972	88,178	418	59,453	316
1973	88,430	430	63,590	309
1974	86,392	470	70,429	346
1975	75,705	577	91,048	420