



BRICKS AND CERAMICS INDUSTRY

BRICKS AND CERAMICS INDUSTRY IN IRAN. Iran is rich in clay, marl, feldspar, silicate, limestone, gypsum, bentonite, talc, kaolin, quartz, and many other minerals, including a large variety of mineral oxides. It further has major gypsum deposits and other outer lining materials such as glaze. This has made it possible for Iran to develop a major ceramics industry. Due to low energy prices in Iran, the share of energy consumption in the country's ceramic production is about 8 to 9 percent of the total cost of the production. Only dyes and some refractory materials of clay need to be imported, although in declining quantities (USD 18 million in 1999; Internet Source 6).

Traditional brick-kilns were and are still found all over the country (see [BRICK](#)). Until recently, bricks were only made in small traditional kilns. A European established the first modern brick-kiln around 1905. However, it was only in 1935 that a German engineer constructed the so-called "Hoffman brick-kiln," with its characteristic high chimney, in south Tehran. Therefore, this type of kiln was known as *hofman* in the industry, and it dominated the skyline of the kiln area, like a forest of chimneys. With the exception of one government plant, all brick kilns were privately owned. In 1948 there were some 35 Hoffman kilns around Tehran, each with a capacity of 15,000 bricks per day. The state-owned plant had one 26-room and one 32-room Hoffman kiln and produced about 80,000 bricks per day. The plant was closed for part of the year due to the lack of storage facilities to air-dry bricks in wet weather.



The plant was manually operated and employed 600 workers in 1948 and produced 20 million bricks. The operation was inefficient, and production costs were high. There were also a number of smaller plants producing high quality bricks. The traditional kilns were also manually operated; the bricks were not uniform in shape and color, and were generally under-fired. Due to the construction boom of the 1950s and the later 1960s, the number of brick plants increased substantially around Tehran. In 1960, the brick industry around Tehran employed 21,000 people, and some 30,000 in 1970 (Overseas Consultants, 1949, IV, p. 153; Floor, 2003a). In 1942, a refractory brick kiln (*kārḳāna-ye ājor-e nasuz*) was built at Aminābād in the vicinity of Tehran with the means available in Iran at that time. It was able to satisfy part of domestic demand, producing some 250 tons of bricks and other products per month (Zāhedi, pp. 90-91, 119-21). However, the locally manufactured refractory bricks had a short life, which negatively impacted the operations of the cement plant (Overseas Consultants, *Report IV*, p. 150).

Table 1. Kilns operated in the Tehran area, 1962.

In 1962, in addition to the bricks produced around Tehran, some 461 million bricks, 14,700 tons of lime, and 129,000 tons of plaster were produced elsewhere in Iran (*Iran Almanac*, 1963, p. 245). In 1971, the Tehran brick kilns (both Hoffman and machine-made bricks) produced 2.4 billion bricks. These kilns were the largest producers in the country and also supplied markets in the north and south of Iran (*Iran Almanac*, 1972, p. 31).

In 1975, brick production amounted to 7,600 million of which 6,950 million traditional technology bricks and 650 million machine-made bricks (*Iran Almanac* 1975, p. 246). A large number of brick kilns are still of the traditional type, in particular in the outlying provinces. For example, in Kal-Kali, south of Kāš (Sistān va Baluĉestān province), there are some 50 traditional brick kilns. In Hamadān province, there were about 1,200 brick kilns at the end of the 1990s. Around Hamadān city there were 80 Hoffman kilns and 76 traditional kilns. All of these kilns pollute the environment through the use of old tires, sawdust, dung, and so-called kiln paraffin as their major source of energy, which, also due to incomplete combustion, emit poisonous gases and particles. Brick-making units were the largest in number of plants in the construction industry. The annual production amounted to 8,374 million bricks and 19,266 tons of refractory bricks (firebrick) in 1989. The machine-operated brick-making units operated at less than 50 percent of their design capacity as compared with traditional kilns (*Yearbook Iran*, 1989/90, pp. 14-26). Currently,



many, if not most, of the workers in the brick kilns are Afghan and Kurdish refugees (both adults and children), who with their families live at the kilns. In 1998, their average wage was 12,000 riāls a day when the official minimum wage level was 8,482 riāls a day. They live under harsh conditions that have been characteristic for this

Because of the lack of domestic capacity, most fireproof products needed *by production units* were imported. With the investment in domestic plants the annual production of fire resistant bricks and materials rose from 90,000 tons in 1988 to 120,000 tons in 1993.

Tile making can be traced back to 1250 BCE, and glazed tiles were and still are used to adorn buildings. Tiles and fired bricks are therefore an intrinsic part of Persian architecture, and the marvels of past craftsmen are to be seen all over the country (see [BANNĀ'Ī](#)). Nevertheless, after the Safavid period the quality of the output deteriorated, and foreign imports were regarded as superior to the domestic output in the 19th century. There was no change in this situation during the first half of the 20th century. There was production in traditional workshops, but their quality left much to be desired (Floor, 2003b, pp. 82-83). In 1961, there were 28 tile factories in Iran, employing 389 workers who produced 10.9 million tiles. However, they still employed traditional methods and therefore were artisan workshops rather than industrial factories. Because of rising labor cost they could not compete with imports, which hurt their position (*Iran Almanac*, 1963, p. 245). To replace foreign imports, Irana Tiles Company (with U.S. assistance) started production in Iran in 1960, using modern technology. In 1965 a second modern tile factory began production and exporting. In 1975, these two factories produced 155 million pieces, of which the domestic market used 70 percent; the remainder was exported (*Iran Almanac*, 1975, p. 247). By 1979, a total of 14 large and medium-sized factories existed. After 1979, the larger ones were nationalized. During the 1980s there was an import ban on tiles, resulting in no new investment in the sector. By 1990, the capacity for the production of tiles rose to 28.5 million m². Of this quantity, 3.2 million m², worth USD 13.2 million, were exported, whereas in 1978, still 3.2 million m² had to be imported.

After 1990, price deregulation was introduced and new investment took place, both in new capacity and modernization of old plants. This also led to higher quality and better designs, which boosted exports. In 1378 Š./1999-2000, thirty units of different types of factories (with a target of 67.1 million m² per annum) produced 60.9 million m² of tiles (74 percent wall tiles and 26 percent



floor tiles). Of this quantity, 91 percent was used within the country and 9 percent was exported (according to the Ministry of Industry). According to planning, the country's production capacity will be increased to 100 million m² in 2001. This means that Iran is the tenth largest tile producer in the world. Seven of the plants had, by 1998, received ISO 9002 (Quality Management Standard) certificates, and the rest are in the process of doing so. The reason behind this is that the industry holds promise for future exports. The industry still depends on imports for some raw materials such as kaolin and aluminum oxide; intermediate products such as porcelain; and some parts for its machinery. Most of the equipment is manufactured in Iran, although the equipment for baking furnaces is largely imported. Since the major costs of tile production are those of raw materials, energy, and manpower, all of which are available locally (except for a small part of the raw materials) and are relatively inexpensive, the country has a significant comparative advantage in this industry. At present, efforts are being made to raise exports to 20 percent of the total production, without adversely affecting the home market, and to cut down production costs and improve export prices.

In the past, the country's demand for industrial ceramics used to be entirely met through imports. However, three plants employing 658 people began production in 1999 with an output of 8,850 tons, sufficient to meet domestic demand and to initiate some exports, which amounted to only USD 200,000 in that year (see Internet Source 7).

Another important sub-sector of the ceramics industry is the production of sanitary ware. The first manufacturer of sanitary ware products, Pars Ceram, began production in 1969 in Qarčak near Varāmin. Prior to its operation all sanitary ware was imported. Two other factories, Mina and Armitaj (of the Gol-Namā Co.) were built during the 1970s to meet demand from the construction boom (see Internet Source 3). The 1980s were a decade of gloom due to price regulation, but after the end of the Iran-Iraq war price deregulation was introduced, and the industry expanded again. The government provided assistance to upgrade technology to enhance quality and diversify its selection of products. The production capacity of these first three factories totaled 22,000 tons in 1979. This figure jumped to 51,000 tons in 1999, indicating a growth of 232 percent compared to 1979. The number of production units also increased to 9 indicating a 200 percent increase over the same period. In 1999, some 2,700 workers were employed with a production of 19 tons per capita. In that same year, some 6,136 tons of sanitary ware were



exported amounting to USD 2 million (Internet Source 3).

In 1999, there were 11 major plants active in the sanitary production industry with 51,000 tons per year capacity. At present, there are 15 factories with the production capacity of 60,000 tons per year. It is forecasted that during the next to 10 years, this capacity will reach 90,000 tons per year. The quality and standard of Iranian sanitary ware do not yet match Italian or French standards, but the quality and the pricing are such that exports have increased substantially. The sanitary ware industry imports most of its equipment due to its advanced nature.

There is also considerable production of chinaware and some glaze in response to rising incomes and the growth of the ceramics industry. Earthenware and crockery of all kinds has been made in Iran throughout the ages. By the end of the 1940s all chinaware was still made with the time-honored traditional methods, and the government was urged to build a modern factory with a capacity of 500 tons (Zāhedi, p. 90). A chinaware factory was built in Tehran in the early 1950s (Roberts, p. 234). In the 1970s, four modern chinaware plants—Kābon, Alborz, Pārs China, and Air Porcelain (Gilān)—were established with a total annual capacity of 4,780 tons of dishes and pots and other chinaware products. Until 1980, domestic demand was about 30,000 tons, 80 percent of which was met by imports. In that year, the government banned the import of chinaware, and consequently new factories had to be built to satisfy local demand. Thirteen production units with an annual nominal capacity of 16,000 tons were operational in 1984. Traditional methods are still used in artisan establishments in, for example, Hamadān and Khorasan. The number of chinaware factories reached 20 in 2000 with a nominal capacity of 46,200 tons per year. Some 9,500 people work in the industry. Iran's consumption per capita was 0.6 kg in 1999. During the same year the domestic consumption was 38,147 tons, indicating overcapacity.

The export volume of chinaware to the Persian Gulf littoral states, Canada, Turkey, and the Central Asian countries amounted to 953 tons or USD 1.1 million in value in 1999, representing 2.5 percent of the country's total exports. To become even more competitive, the project "Energy efficiency in performance of tile and ceramic industry" has been in effect in Iran since the beginning of the year 1380/2001. In total, 65 active factories in ceramic tiles, sanitary and chinaware have been selected to participate in this project.



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