

## Earthen kitchen products

**National Third**  
Energy and Environment




**Mansukhbhai Raghavjibhai Prajapati**  
Rajkot, Gujarat

Scout: Gauri Vagnar, Ahmedabad



Mansukhbhai Prajapati (44), a traditional clay craftsman, has developed an entire range of earthen products for daily use in the kitchen. These products include water filters, refrigerators, hot plates, cooker and other such items of daily use.

Born in the Prajapati family, originally belonging to the village Nichimandal of Morbi, Rajkot, Mansukhbhai had exposure to the clay tradition since childhood, as this was his family's traditional profession. Being the only son and the eldest child, though he helped his father in his work, he was more interested in cricket and other games. He used to load clay from the ponds and fields on the donkey and ferry it to his place. Other than this, his contribution was limited as he was not much interested in the pottery work. After the breakdown of Machhu dam of Morbi in 1979, his family lost everything and they had to migrate to Wankaner, where his father took the job of a mason to support the family. It was here that his journey as a worker in a small rooftop tile manufacturing unit started, which today has reached a point where he is recognized as a successful entrepreneur.



The place, Morbi, is a taluka in Rajkot district, located in the Saurashtra region of Gujarat. It accounts for more than 70 per cent of the total ceramic production in India and is home to more than 350 ceramic products manufacturing units. Than, Wankaner and Morbi form the ceramic triangle of the region. The products manufactured here are not only for domestic consumption but are also exported.

### **The initial struggle**

Though his family was struggling with finances, his parents motivated him to study up to class ten. He then left studies to provide a helping hand in augmenting family's resources. He started to work in a small factory. But, in the very first month, while working inside a chimney, his left eye got injured because of which he had to quit work for over eight months. Once his sight improved, in 1984, he started his tea lorry near the highway but some how due to the persistent comments of some of his acquaintance he closed it down within six months.

Earlier, one of his uncles had visited him at the tea lorry inquiring about a person who would be interested to work in a rooftop tile manufacturing unit. He had shown his interest then and after closing the tea lorry joined the unit, Jagdamba Potteries, as a trainee at Rs. 300 per month in 1985. He worked hard for three years and learned all the related works of the unit. During this time, he also helped his parents marry off his younger sisters.

### **The entrepreneurial streak**

Having gained a sound knowledge while working in the pottery unit, the desire to start an enterprise of his own started to grow in Mansukhbhai's mind. During his childhood, he saw earthen pans/hot plates (locally termed as *Kaladi/Tavdi*) being manufactured manually on the potters' wheel (locally termed as *Chhakdo*). Using this, one person can only make about 100 units per day. He had seen roof tiles being manufactured in large quantity

on hand press, which made him think why cannot earthen pans be made the same way?

In 1988, he left his job and took a loan of Rs 30,000 from a money lender to start his own earthen plate manufacturing factory. He purchased a small piece of land for the factory, dyes and presses, soil mixing machine, electric potter's wheel and other scrap objects. Then he modified the roof tile making hand press and developed a hand press machine having capacity to produce 700 earthen pans per day.

It took him eight days to put everything together and on the ninth day, the first day of his work, he made 50 pieces of the earthen plate. He put all of these in a container tied to the carrier of the cycle and went to the nearby villages to sell the same. He sold one piece for 0.65 paise and within two days he could sell the entire first batch. This was the first income of the budding entrepreneur.

This continued for some time. He then realized that there was difference in making earthen objects on manual potter's wheel and making them on electric potter's wheels and using presses. Also there was another problem with his *tavas*. They used to break if the heating went on for a while. He got negative feedback from many of his customers. He tried reducing the price of his *tavas* but still people did not find it as a good value for money. He then experimentally varied the proportions of different types of clay to obtain the preferred mix. Gradually, he increased his production and in six months time started hiring *chakda* (motor rickshaw) to go around nearby villages to sell his products. He also got married in the same year, in 1989.

In 1990, he got his unit registered in the name of Mansukhbhai Raghavbhai Prajapati at DIC, Rajkot. Once, in 1992, a trader from Bhuj came to Wankaner. Seeing Mansukhbhai's improvisation of the tile press, he got impressed. He then offered to purchase all the 3000 *tavas* that Mansukhbhai had ready with him. His plan was to purchase them in bulk from Wankaner and sell them at slightly lower rate than the prevailing market price back home. For Mansukhbhai this was the first bulk order, which not only gave

him money but also much confidence. For the next two years, he catered to both retail and bulk orders from Bhuj. Though the earning was not great but he managed to somehow stay afloat and clear all his debts also.

### The turning point

In 1995, a business man from Rajkot, Chiragbhai Patel came to Wankaner looking for a vendor who could provide him clay water-filters. Chiragbhai was an exporter who had to deliver this order to Nairobi, Kenya. He got the lead about Mansukhbhai from Jagdamba Potteries, where Mansukhbhai worked earlier. They recommended his name to him. Mansukhbhai was shown the design of the filter. He was expected to deliver the water filter in a month's time but he delivered within eight days. It was a terra cotta filter having a ceramic candle for filtration. Looking at the quality of the output, Chiragbhai immediately ordered 500 pieces at a price of Rs. 200 per piece, which was double the earlier decided price of Rs. 100 per piece. The product was sold in the name of Aquatech through Chiragbhai's marketing agency.

This incident changed his life. A business of Rs. 1 lakh not only gave him financial freedom but also the confidence, social respect and identity.

Under the guidance of Chiragbhai and Parabbhai, Patent Officer at Ahmedabad Branch, who saw the product first in a fair at Ahmedabad, Mansukhbhai filed for Design registration and also the Trade Mark application in the name of *Mitticool* in 2001. Presently, he is manufacturing and selling the water filter of different capacities viz. 8 litre (Rs. 300/-), 10 litre (Rs. 350/-) and 12 litre (Cost Rs. 400/-). Masukhbhai has sold more than 800 pieces till date.

### The *Mitticool* story

In the fateful earthquake of January 2001, Mansukhbhai suffered huge loss, as most of his stock got broken. He distributed the stock that escaped the quake to the quake affected people of Kutch. In February 2001, Sandesh Gujarati Daily had a photo feature on the earthquake where at one place it

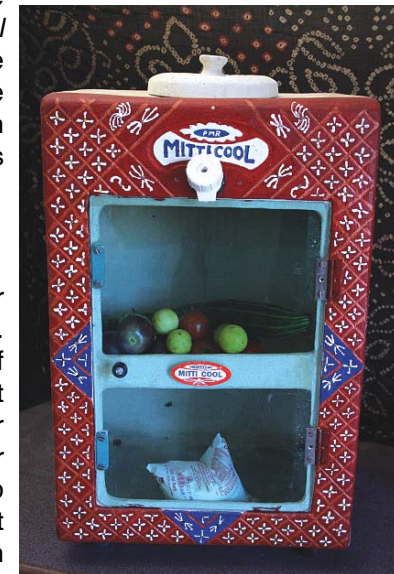
showed a broken water filter of Mansukhbhai with the caption 'the broken fridge of poor'.

This caption ignited a thought in him to work on a rural fridge that did not need electricity and could be used by masses. Though he started thinking about it after the Gujarat earthquake of 2001, it was 2002 when he actually started his work. Almost the same time, Mansukhbhai came into the contact of Gujarat Grassroots Innovation Augmentation Network (GIAN), Ahmedabad. After a painstaking journey of three years during which he tested all sorts of soils and fridge designs, he finally came out with *Mitticool* fridge in 2005. A civil engineer saw the fridge and looking at its applications gave him the order of 100 pieces and an advance of Rs. 2 lakh. This news was also covered by local dailies.

### *Mitticool*- the fridge

It is a small refrigerator made of clay for storing vegetables, fruits, milk and water. It does not need any external source of energy for the cooling effect. The first version of *Mitticool* had two water chambers, one at the top and the other at the bottom. Water filtered from the top chamber (20 litre capacity) and got collected in the bottom chamber, which also had a dispensing tap. Between the two water chambers was a space for storing vegetables, fruits (up to 3 kg) and milk. The principle of cooling in the *mitticool* is same as that of clay pots, or '*matkas*'. Mansukhbhai sold this fridge for Rs 1500, but discontinued its production after developing a better version of the same.

In the second version, Mansukhbhai did away with the bottom water chamber thereby increasing more space for storage. The tap was fixed on the top



water chamber whose capacity was reduced to 10 litres. The two bottom compartments together can store about 5-7 kg of vegetables, fruits and milk. The natural cooling process inside the refrigerator can keep vegetables and fruits fresh for around six to seven days, while milk can be preserved for three days. Apart from saving on electricity bill, the new device also preserves the original taste of fruits and vegetables.

Testing of the fridge was facilitated at KVK, Chaswad, Bharuch by GIAN. It was found that the temperature inside the fridge was 4-5° C lower than the room temperature. The shelf life of coriander kept inside the fridge was found to be 4 days as against 1.5-2 days normally at room temperature. The shelf life of brinjal, chilly & okra kept inside the fridge was found to be in the range of 6-7, 4-5 and 5-6 days respectively. Similarly, in the refrigerator the shelf life was found to be 4-5, 4-5 and 5-6 days.

GIAN facilitated design improvements in the fridge through National Institute of Design (NID), Ahmedabad. It also helped Mansukhbhai to appropriately ascertain the packaging requirements so that it can be comfortably transported over long distances. Subsequently, a neat package was designed using thermocol casing.

*Mitticool* was featured recently at a conference organized by the Centre for India and Global Business, Judge Business School, University of Cambridge, UK in May 2009. Bosch and Siemens Hausgeräte (BSH), Germany, one of the world's largest home appliance companies have also written to GIAN and showed interest in the product.

### **Non-Stick Clay Tava**

In 2003, Mansukhbhai's wife asked him to bring a non-stick *tava* from the market. He inquired and found that such a *tava* costed a minimum of Rs 200. He thought that in his firm *tavas* were already being made, why not make them non-stick and affordable so that they come within the reach of the masses.

Mansukhbhai did some market research on the product. He found out that apart from being costly, Teflon coated non-stick *tavas* did not retain the natural taste of the food. Also the coating wears off quite soon.

He visited Mumbai to learn the process of non-stick coating and looked for appropriate materials to use in his clay *tavas*. A Mehsana based non-stick manufacturer helped him in perfecting the process of adding layers on the earthen *tavas*. After about a year of research, and after making and breaking almost one lakh trial *tavas*, he succeeded in developing the non-stick coated earthen pan using Azo Noble, another food grade non-stick material like Teflon.

Mansukhbhai's *tava* is an earthen griddle with a non-stick coating. It gives advantages of non-stick cookware while preserving the natural taste of food cooked using earthen griddles. Costing between Rs. 50-100 for *tavas* 8'-10' in diameter (with and without handle), it is a cheaper alternative to metallic non-stick cookware. Also, in this case, the consumption of LPG is low. As the coating gets absorbed in the pores of the earthen material, it does not wear off easily too.

The non-stick coating has been tested at the Institute of Chemical Technology, University of Mumbai. Mansukhbhai has sold more than 50,000 such *tavas* till date. Feedback was collected from different users who have been using this *tava* thrice a day for a minimum of three months to more than two years. Maximum reported no problems while using the *tava*. A few people reported loosening of handle in *tavas* with handle. While most mentioned the ease in handling, some added that as the oil requirement was less, the cooked food was healthier and tastier. For this product, Mansukhbhai was also supported with an investment of Rs. 1,80,000 under the Micro Venture Innovation Fund (MVIF) of NIF. GIAN also helped him to set up a company, Clay Creations, in 2008. He was also assisted to develop the online retail portal ([www.mitticool.in](http://www.mitticool.in)). Adding value to the original



innovation, GIAN also gave Mansukhbhai the idea to have a metal ring around the *tava* so that a handle can be attached apart from guiding him in designing the packaging material.

### The road ahead

Mansukhbhai participated in the *Saatvik*-the Traditional Food Festival in 2008 where he sold his innovations apart from the regular clay products. Seeing the traditional stall, many visitors also. This gave him clay cooker. He has utensils- eating plates holding sections, cooker and the entire be unveiled in the Traditional Food Festival at IIM Ahmedabad in December 2009.



black *haandi* (pot) at his asked him to improve it an idea to develop the also developed earthen with separate dish glasses and bowls. The range of utensils would next *Saatvik*- the

An idea of a student from Bihar, Ankit Tiwari, to develop earthen thermos was shared with him by NIF and the design discussed. Masukhbhai promptly worked on the idea and made the thermos in 1 litre and 2 litres capacity. He has sold over 500 such thermoses till date and share of the profit has also been shared with Ankit.

His success story has been widely covered in the regional and national media. The Discovery Channel, Aaj Tak, NDTV, IBN 7, DD News, BBC and Vividh Bharti, AIR have covered his innovations.

Mansukhbhai is a man with a mission and always keeps himself occupied. If he is not experimenting in his factory, he is mostly traveling in connection with the marketing of his products along with his wife. After inventing a fridge made of clay, he further wants to improve it by fitting a RO (Reverse Osmosis) unit to it so that one can get pure water of good taste and quality. He is now contemplating of making small '*Minute Mitticools*' like 5 minute *mitticool* or 2 minute *mitticool*, which essentially means that the *mitticool* would be able to cool water in either 5 minutes or 2 minutes.

He has also conceived an idea to develop a house, which would not require electricity connection for any purpose. The cooling in the house would be natural with no need of a fan. Similarly the lighting would also be natural. He also wants to get his name included in the Guinness book of records for his inventions and also get an award at the hands of the President. He is working to make a complete range of cooking utensils using clay. Currently, he is trying to improve on the design of the non-stick *tava* so that it can be made flat and be used for making *dosas* and other preparations.

Mansukhbhai has his parents, wife and two sons in his family. His father Raghavbhai and wife Hiraben help him in his work of designing and making potteries. His younger son is in school while the elder one is completing his diploma in ceramic technology. He always had the support of his father who used to give him tips from time to time based on his own experiences. His wife was another pillar of strength, always co-operative and understanding, helping him during odd hours and motivating him in times of failures. She is always at his side whenever he goes for an exhibition and takes care of the sales. Apart from the family, he got support from others too. He used to take his inventions to his friends and other 'more educated people' (as

he puts it) for suggestions and criticisms. Their feedback has resulted in making *Mitticool* and other products, a success story, as we see it today.

