

# CLUSTER PROFILE

## ELECTRICAL FITTINGS CLUSTER

### SARGODHA



*Turn Potential into Profit*

**Small & Medium Enterprise Development Authority**  
Ministry of Industries, Production & Special Initiatives  
Government of Pakistan

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## 1. Description of Cluster

### 1.1. History & Background of Cluster (The Story of Bakelite)

The first completely synthetic man-made substance was discovered in 1907, when Leo Baekeland, a New York chemist, developed a liquid resin that he named Bakelite. Baekeland had developed an apparatus - which he called a Bakelizer - that enabled him to vary heat and pressure precisely so as to control the reaction of volatile chemicals. Using this pot-like apparatus, Baekeland developed a new liquid (bakelite resin) that rapidly hardened and took the shape of its container. Once hardened, the resin would form an exact replica of any vessel that contained it. This new material would not burn, boil, melt, or dissolve in any commonly available acid or solvent. This meant that once it was firmly set, it would never change. This one benefit made it stand out from previous "plastics." While celluloid-based substances could be melted down innumerable times and reformed, Bakelite was the first thermo set plastic which would retain its shape and form under any circumstances.

Bakelite could be added to almost any material - such as softwood - and instantly make it more durable and effective. Numerous products began to be manufactured based on this new material. One of the sectors of society most interested in its development was the military. The US Government saw Bakelite opening the door to production of new weaponry and lightweight war machinery that steel could not match. In fact, Bakelite was a key ingredient in most of the weapons used in the Second World War.

Bakelite is used for domestic purposes such as electrical insulators. For this purpose it proved to be more effective than any other material available - so effective, in fact, that it is still used as such today. Bakelite is electrically resistant, chemically stable, heat-resistant, shatter-proof and neither cracks, fades, creases, nor discolors from exposure to sunlight, dampness or sea salt.

### 1.2. Defining the Products

There are varieties of products which can be included in the product mix in electrical fittings. Electric switches (Piano), Sockets, bulb holders, Bell Push, Ceiling Rose etc. are quite familiar to people as they are found in every home. These products are relatively produced on mass level and getting 70% of the total electrical fittings production. While the other products which may include Power Plugs, Indicators, Fuse, Buzzer, Fan Dimmer, Tube Choke & Patti, Main Switch, Wire Extensions etc. comprise 30% of the total production. They can be manufactured using different major raw materials e.g., steel, brass, thermosetting or thermo-plastic resins. Bakelite powder also known as phenol formaldehyde resin is chiefly used for the manufacture of these items.

### 1.3. Geographical Location

Sargodha, Karachi and Lahore are major clusters for Electrical Fittings Industry. Almost 70% of Pakistan's Electrical Fitting products are being produced in Sargodha.<sup>1</sup> The major supply of electrical accessories to units of other cities like Karachi and Lahore is also from Sargodha.

**NOTE:** 70% (Sargodha)                      20% (Lahore)                      10% (Karachi)

### 1.4. Core Cluster Actors

#### 1.4.1. Size of Industry

Following table indicates the industry size in various categories:

**Table 1: Industrial Structure** (No. of units)

Large	Small and Medium (SME)	Cottage
20	200	1000

**Large:** The units covering/manufacturing all types of electrical fittings.

**SME:** The units which manufacture major types of electrical fittings i-e Switch, Socket, Power Plug etc.

**Cottage:** The units which manufacture single item of electrical fittings.

#### 1.4.2. Employment Generation

The industry is labor intensive and concentrated in small & cottage industry sectors. Most of the production process has done in household and cottage sector. Almost 100,000 people are employed in this sector.

#### 1.4.3. Total production

The Estimated monthly Electrical Fittings production is nearly 10 million units/pieces of various electrical products like Switch, Socket, Power plug, Bell push, TV & Tel. Socket, Holders, Fan Dimmers etc. Electrical Fittings Industry across the country is working in unorganized sector. No data is available or gathered to anticipate the growth factor. Therefore it is critical to assume the growth percentage in the previous years. However if we associate the industry with the growth of its allied industry (construction sector), it can be considered as proxy i.e. around 7-8%

<sup>1</sup> Electrical Fittings Manufacturing Association

#### 1.4.4. Capacity Utilization

At present installed capacity and production of these fittings can be assumed sufficient to fulfill the demand. However, a sufficient gap is still expected to exist due to increasing number of housing units in Pakistan. The overall housing construction has to raise 500,000 housing units per annum<sup>2</sup> in which the electrical fittings demand is largely fulfilled by the locally manufactured products. According to a careful estimate that 30% of the electrical fittings mainly an Energy Saver are currently import from China.<sup>3</sup> The devastating earthquake disaster also aggravated unprecedented demand of 600,000 new houses<sup>4</sup> which is find encouraging for electrical fittings demand. The manufacture of switches, plugs, sockets and other accessories like Ceiling Rose etc. are very simple and have a bright future in Pakistan.

#### 1.5. Other Cluster Actors

Stakeholder sub-contract/out-source a product from support firms to reduce cost. Support firms engage in price based competition to get subcontracting orders. There is a continuous growth of support firms in the cluster. Support firms have developed a niche in a product/service. In some cases, stakeholders are fully dependent on support firms for continuous innovation in this product/service to remain competitive.

#### 1.6. Current Cluster Scenario

Electric Fittings Industry of Sargodha has a huge potential and is critical to SME growth. Despite its economic importance, the Electric Fittings Manufacturing SMEs in Sargodha currently suffer from a variety of technological obsolescence issues and structural & institutional weaknesses, which has constrained their ability to take full advantage of the rapidly advancing process of globalization.

As industry is still working on conventional lines and they do not use basic CNC machines (wire cut, milling etc) for die/mold making, there is an urgent need to move the industry towards step by step automation to compete with rapidly changing environment of world in technology and regulatory framework. Simultaneously, there is also need of the time to comply with the international environmental, management, safety and sanitary standards.

## 2. Analysis of Business Operations

### 2.1. Production Operation (Process flow)

The operations involved in this industry can be divided into following heads:

- a) Molding and finishing of the plastic body,

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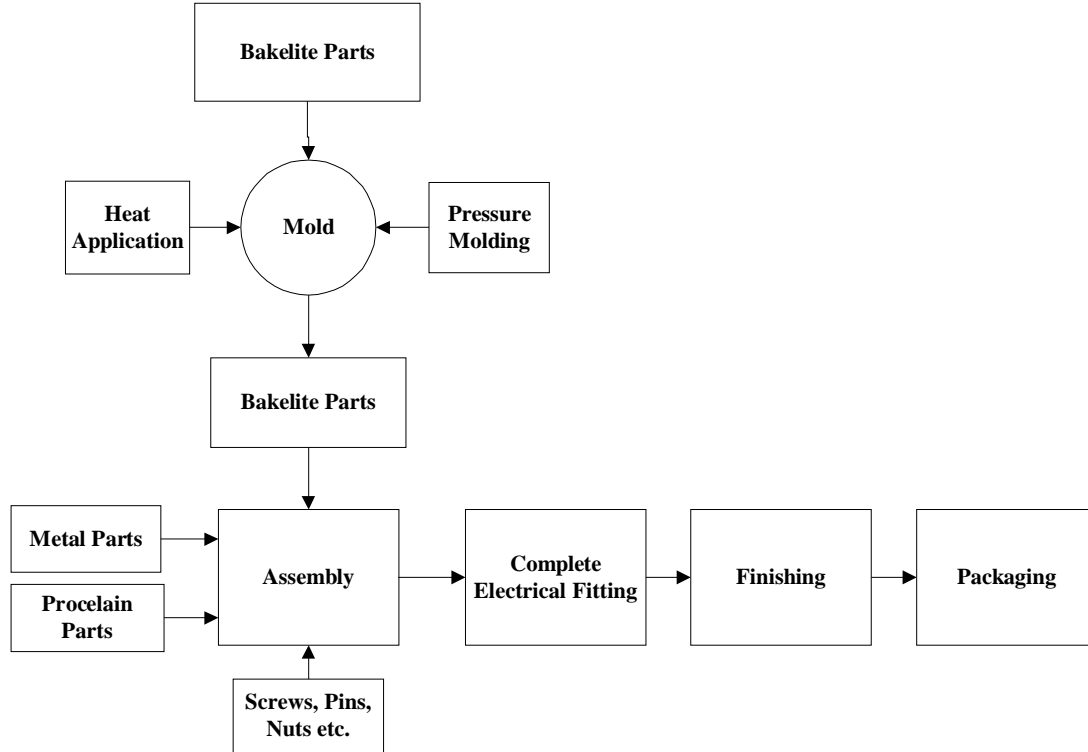
<sup>2</sup> quoted by Shaukat Aziz at a 2-day conference on Housing Finance System of Pakistan Nov 18, 2004

<sup>3</sup> Electrical Fittings Manufacturing Association

<sup>4</sup> NADRA Report in Daily Jang 14 Nov 2005

- b) Fixing of metallic inserts, and
- c) Assembly and packing.

**Figure 1: Process Flow Diagram**



The manufacturing process for all the electrical fittings is more or less the same. The manufacturing process starts with the mold making. A measured quantity of Bakelite is poured into the mold/dye fixed on a hydraulic press. The press has arrangements of two gas burners, one placed below the mould and other on top. Once the Bakelite powder is poured into the mould, burners are switched on and the press is locked manually. Each product takes specific amount of time to take the desired shape and strength. A small miscalculation on this stage can lead to disfigured or products with less than desired strength. Once the products take its final shape, the press is lifted and the finished product is taken out, either manually or through an inbuilt mechanism in the mould. At this stage, different metal parts including pipes and pins are attached to the main body of the products. Moreover, most electrical fitting products are composed of more than two components. Therefore different parts are also attached at this stage with the help of screws and nuts. Now the product is ready for final finishing to chop off any lose raw material and packaging.

## 2.2.Raw Materials

- a) Bakelite powder or phenol formaldehyde resin
- b) Metal inserts such as sleeves, pins, screws etc.

c) Packaging material.

The Bakelite Powder, the major component in Electrical fittings manufacturing is being imported from China and Italy. Some of the manufacturers are using the local (made in Gujranwala, Sheikhpura and Gadoon) powder but the industry is most likely to use the Chinese powder which produce good results in the finished product. However the use of local manufactured powder is found increasing in some of the big items like Main Switch, Ceiling Rose, Power Plug, Light Plug etc. to minimize the cost. The availability of imported Bakelite Powder is often scarce and the manufacturers have to face numerous difficulties to maintain the demand. Currently 4-5 containers of worth US\$ 0.149 million were being imported and consumed from China & Italy.<sup>5</sup>

### **2.3. Technology Status**

The die making facility is not supported with any institutional infrastructure. Currently, SMEs of electrical fittings industry have to go to Gujranwala, Lahore and some of them even go to China for developing molds and dies. There is no testing facility for checking mould hardness, metallographic and material testing of moulds etc. Electric testing facilities (e.g. Voltage/Ampere Testing) are also not available. Use of manual molding presses also hindering the production capacity.

### **2.4. Quality Assurance (Quality standards and Certifications)**

The Electrical fittings manufacturing Industry is not yet provided with any institutional infrastructure support in the areas of Technological Development, Design & Product Development and Human Resource Development.

### **2.5. Market Mechanism**

Currently there is no direct export from Sargodha. The production is being distributed through distribution set up. But the direct sale through sales agents is most commonly used by the manufacturers.

### **2.6. Financing/ Banks and Financial Institutions**

At present, there is no financial institution has developed/offer any lending scheme for the development of Electrical Fittings Sector. The financial products available in the market are not geared to cater the requirements of this sector. The financial institutions lack awareness on ways to market and sell their services to SMEs. An inadequate level of education also an obstacle to accept the financial products.

### **2.7. Human Resources**

The education level of workers/labor working in this cluster is very low which is a major hindrance in learning and accepting new tools and techniques. The industry is forced to work on conventional lines. There are no vocational training facilities for the training of workers of this cluster.

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<sup>5</sup> Electrical Fittings Manufacturing Association

### 3. Institutional Setup

#### 3.1. Entrepreneurs Associations

It is observed that there is no formal Association so far developed. The Small & Medium and Cottage Sector have some conflicts on certain issues plague this industry. Resultantly, there are two Associations developed with the name of Electrical Fittings Manufacturing Associations, Sargodha.

#### 3.2. Govt./Semi Govt. Support Institutions/ Educational Institutions

Some of the Govt./Semi Govt. institutions like Vocational Training Institute (VTI), Technical Education and Vocational Training Authority (TEVTA) and other Technical Training Institutes (TTIs) are present in Sargodha but there is no formal training or curriculum designed to train the manpower of this specified cluster according to the stakeholders technical requirements.

#### 3.3. Private BDS Providers (Consultants)

The Business Development Service Providers (BDSPs) do not offer any services for developing, implementing and monitoring of Business plans, pre-feasibilities etc for electrical fittings cluster. BDSPs are weak to develop their services in a manner that is conducive to this cluster needs.

### 4. Major Players

#### 4.1. Electrical Fittings Manufacturers

1. Hero Pak Electrical Accessories  
Military farm Road, Urban Area, Sargodha.  
Tel: 048-3717525      Fax: 048-3717526  
Contact Person:      Ch. Muhammad Iqbal
2. Jeko Electrical Accessories  
Millatabad, Sargodha.  
Tel: 048-3714715      Fax: 048-3717894  
Contact Person:      Sheikh Iqbal Ahmad
3. Crescent International  
24-Shaheen Park, Sargodha.  
Tel: 048-3724038      Fax: 048-3728196  
Contact Person:      Rana Hamid
4. Babar Traders (Shanghai China)  
Eidgah Road, Sargodha.  
Tel: 048-3713940      Fax: 048-3719342  
Contact Person:      Waheed Ahmad
5. China Electrical Accessories

Block No. 22, Sargodha.  
Tel: 048-3712912 Fax: 048-3717478  
Contact Person: Tariq Dogar

## 4.2.Raw Material Suppliers

1. M/s Zain Enterprises  
Eidgah Road, Sargodha.  
Tel: 048-3701766  
Contact Person: Sheikh Muhammad Naeem
2. M/s Ellahi Traders  
Block No. 25, Sargodha.  
Tel: 048-3714043  
Contact Person: Mehr Ellahi
3. M/s Rehmat Traders  
Block No. 25 Near Water Supply Road, Sargodha.  
Tel: 048-3710731  
Contact Person: Muhammad Saleem

## 4.3.Die & Mould Maker

- 1) Mirza M. Anwar Die Maker  
Rehmanpura No. 2, Sargodha.  
Tel: 048-3718044  
Contact Person: Mirza Muhammad Anwar
- 2) Khair Muhammad Die Maker  
Eidgah Road, Azam market, Sargodha.  
Tel: 048-3717894  
Contact Person: Khair Muhammad
- 3) Ijaz Die Maker  
Azam Market, Sargodha.  
Tel: 048-3711135  
Contact Person: Muhammad Ijaz
- 4) Safdar Die Maker  
Chowk Kabari bazaar, Sargodha.  
Tel: 0300-6031426  
Contact Person: Muhammad Safdar
- 5) Universal Die Maker  
Kot Farid, Sargodha.  
Tel: 0300-6026561  
Contact Person: Muhammad Nadeem

## 5. SWOT Analysis

### 5.1. Strengths

- The Electrical fittings industry is able to get better terms of sales from the market for its strong product mix and affordable price.
- Electrical fittings' manufacturing unit is low cost unit so therefore contains ample opportunity to grow.

### 5.2. Weaknesses

- Electrical fittings manufacturers are currently suffer from a variety of technological obsolescence issues like conventional mould/die making, old/manual molding presses etc.
- The Electrical fittings industry is encountered with Government unfriendly intervention such as Labor, Social security etc.
- The major portion of the Electrical Fittings industry is concentrated in unorganized sector with most of the Small and Cottage industrial units thus hindering their ability to manufacture standardized products.

### 5.3. Opportunities

- Relaxation in duty and tariffs on the import of Bakelite Powder may enhance the ability of the manufacturers to take full advantage of their installed capacity.
- Adequate level of Marketing and Promotion may able the manufacturers to promote their products at international level.
- Institutional infrastructure support in the areas of technological, design, product and human resource development would definitely pave way for development.
- The growth of Electrical Fittings Components sector is also promising.

### 5.4. Threats

- The Electrical Fittings Industry is labor intensive and facing critical labor shortage of skilled workers specially molders.
- Import of Electrical Fittings from China is a continuous threat to the local manufacturers which is succeeding to get sizable share in the electrical fittings market.

## 6. Investment Opportunities

- Local production of electrical fittings components like Screws, Pins, Springs, holder ring, etc to cater the increasing production of electrical fittings of various types.
- Import and manufacturing of Bakelite Powder has an enormous potential for investment.

- Printing and Packaging for electrical fittings packing can also be notified another potential trading activity.
- Manufacturing of Glass Tube for Energy Saver has unprecedented demand as currently 50-60 containers of Energy Saver is import from China.