



## Improved Jaggery (*Gur*) Making



Jaggery, commonly known as '*gur*' in India is a traditional, non-refined and centrifugal sugary material consumed in Asia, Africa, Latin America and caribbean countries.

It is rich in iron, a composite of haemoglobin which prevents anaemia (apart from nutrients and minerals). It is a source of energy for rural masses as well as it is consumed in urban areas during winter.

The main raw materials used in it are sugarcane and date palms. It is a traditional cottage industry in villages producing sugarcane and date palms.

Following steps are involved in the production of jaggery:

1. Cutting sugarcane from fields
2. Feeding in roller crushers
3. Transfer to open boiling pans (*kadai*) heated by underground '*Bhatti*' made from building bricks joined by clay mortar
4. Adding ingredients like sodium-bi-carbonate for clarification of juice
5. Transfer thick (hot) paste to trays or moulds

In conventional design the '*Bhattis*' are constructed using building bricks joined by clay mud and bricks and are not used on the floor of kiln. Indian Institute of Petroleum (IIP) Dehradun. Uttarakhand had developed the improved design of *Bhatti* in which three open pans (*kadaies*) are kept over the kiln in sequence for boiling of sugarcane juice.

The dried baggase is fed from one end of the kiln while at the other end chimney is provided for release of smoke. At present, due to improper design of kiln and chimney more fuel is required and dense smoke is released out of chimney due to incomplete combustion.

### Advantages of improved design

The improved design is eco-friendly and has the following advantages:

1. Saving of fuel (baggasse) by 10 percent
2. Reduction of smoke/ gases from chimney as it is environmental friendly
3. Use of round chimney of appropriate height instead of square cross-section.
4. Use of refractory bricks enhances life of chimney
5. 20 % higher yield of gur from same quantity of juice
6. Improved quantity of *gur*
7. Improved fuel feeding system and air entry ports have been optimised for better combustion.
8. Bottom ash could be used as building material

### Techno-economics

1. Production capacity 8-10 q/day
2. Shed 400 sq. ft- 1.00 lakh

### Equipment

1. Furnace and chimney
2. Power driven sugarcane crusher (electric motor or diesel engine)
3. Three boiling pans (MS 62 diameter of thickness 14, 16, 22 mm)
4. Mould, trays etc.

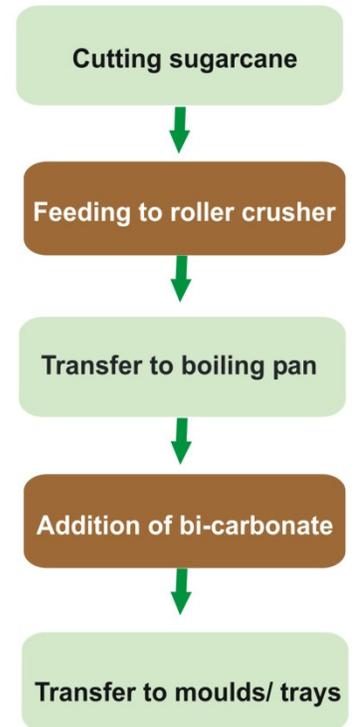
The *gur* making is an economic rural industry since the price of *gur* and sugar are competitive.

### Applications of *gur*

Applications of *gur* have been diversified such as:

- Groundnut mixed *gur*
- Gur containing dry fruits cut into size
- Gur pieces containing ginger etc. for use in winter

### Process flow chart



Sugarcane crusher

**Gur chocolate:** The author has prepared chocolate toffee/bar using *gur* instead of sugar. It does not lead to dental cavities among children. The ingredients are *gur*, butter/ pure ghee, milk powder and choco powder, etc.

**Gur powder:** it is used in Punjab/ western U.P. the *gur* in hot condition is powdered by rubbing with palms of hands (using gloves). It is yellowish in colour and is very tasty.

### **Packaging**

Attractive packs could attract customers and products could be sold at higher selling prices.

### **For Source of technology/ design contact**

Director,  
Indian Institute of Petroleum,  
P.O. Mohkampur, Dehradun, Uttarakhand

### **For details contact**

Indian Institute of Petroleum, P.O. Mohkanpur Dehradun, Uttarakhand for technology or demonstration of process in working units.



**M. S. Viridi**

Ex-Director, CSIR, Bhopal.

H-15, Sterling Castles, Hoshangabad Road, Bhopal.

E-mail: [virdim@yahoo.com](mailto:virdim@yahoo.com)

**Note:** The author may have used various references in the preparation of this article. For further details please contact him/her.

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