



## 3. THE MELTING AND ANNEALING

by Lars Gunnar Johansson and Hans Fredriksson, Glafo



PHOTO: LARS GUNNAR JOHANSSON, GLAFO

*Figure 3.1 Pelletised batch that has been charged into the melting furnace.*

### HOMOGENEOUS GLASS

A homogeneous glass is one in which the glass composition is identical in all parts of the glass.

Optical glass used for spectacles, telescopes and camera lenses needs to be homogenous so that the light passing through it is not distorted.

### THE MELTING PROCESS

Achieving a perfect glass in the melting process is not easy. It requires that a mixture of various raw materials, the glass batch, be turned into a *homogeneous glass*. There are many factors that need to be controlled if the melting process is to function ideally.

When melting glass in a tank furnace the batch recipe, temperature, energy supply, pull rate and type of products are all fairly constant for long periods. The melting process becomes more constant and there are more opportunities for controlling the process by means of bubbling, stirring, etc.

When melting glass in a pot, the relationship between batch, cullet and molten glass already in the pot is constantly changing. The condition of the furnace, the melting schedule, the quality of the pot, etc. also vary. Keeping all these factors constant is a real challenge but an essential aspect of achieving high-quality glass.

The quality of the raw materials is also important. The manual glass industry's investment in producing batch pellets – *Figure 3.1* – has led to an improvement in glass quality. Improved furnace designs and control systems have also helped to improve quality.