5

Hollowware and glass tubing

The most widespread glass products belong to the hollowware family. Hollowware is encountered everywhere. In the broadest sense, these products are consumer goods such as bottles, or consumer durables such as drinking glasses or glass lamps.

Most hollowware is made of soda-lime glass. Crystal and lead crystal and numerous other special purpose glasses are exceptions.

The processing and finishing of hollowware are important fields in their own right creating a wide variety of products. Their starting material is hollowware manufactured by the glass factory.

5.1 THE MOST IMPORTANT TYPES OF HOLLOWWARE

The huge hollowware sector can be divided into several groups, according to different criteria. One is the manufacturing process, which can be subdivided into mouth blowing, machine blowing and pressing, to name the most important ones.

It can also be classified according to the chemical and physical properties. This results in such classifications as bottle glass, semi-white hollowware, crystal glass, lead crystal and so on.

Usually hollowware is classified according to its use. This is how worldwide statistical data in the industry are compiled. There are container glasses (bottles, jars, medical, and packaging glass), tableware (drinking glasses, and other glassware for household use) and construction hollowware (glass building blocks, etc.). Medico-technical hollowware and illuminating glasses fall primarily within the realm of the special glasses (see Chapter 6) and are discussed there.
The shaping of hollowware

Each of these types of hollowware will be discussed individually. However, since many of them use the same manufacturing processes, the following section will first deal with this subject as a whole.

5.2 THE SHAPING OF HOLLOWWARE

The first known hollow glass body was fashioned in ancient Egypt by coating a shaped sand core with viscous glass (Fig. 1.1).

The real beginning of hollowware manufacturing did not start until the invention of the glassmaker's blowpipe in about 200 BC. The technique of shaping glass using a blowpipe has survived in the originally developed form to the present day. Even the operation of modern glassblowing machines is based on the manual techniques, although they now may hardly be recognized.

5.2.1 The mouth-blowing process

The glassworker's blowpipe is a steel tube with a wooden handle and a mouthpiece at one end. It is about 1.5 meters long. At the other end is the nose (or gathering head), an extension which picks up a gather when dipped into molten glass. By rotating and swinging the pipe, the glass is prevented from running off while it cools. The gather can be dipped into the melt again to pick up more glass, depending on how much is required (Fig. 5.1).

A small hollow body, the parison, forms by giving a short puff into the pipe. Its external shape can be formed by turning it in a molded, water-soaked beech wood block (blocking) or rolling it on an iron plate, whereby the gather becomes more viscous as it cools.

The subsequent reheating in the furnace, along with rotating and swinging of the pipe allows the temperature difference to equalize before the product takes its final shape (Fig. 5.2).

The finishing step of individually shaped articles is done completely manually, using only a few special pieces of equipment such as a wooden board (paddle) and tongs. However, the glass is more often blown into a mold which allows the production of many identical hollow items.