

METALLURGY OF COPPER

CHAPTER I

1. Introduction. The metallurgy of copper is one of the oldest and most important branches of the metallurgical science. It has a long history, and its development has been marked by many important discoveries and inventions. The purpose of this chapter is to give a general survey of the subject, and to describe the principal processes and methods used in the extraction and refining of copper.

The first step in the metallurgy of copper is the extraction of the metal from its ores. The principal ores of copper are the malachite, azurite, and chalcocite. These ores are usually found in association with other minerals, and the extraction of copper from them is a complex process. The first step is to crush the ore into small pieces, and then to grind it to a fine powder. This is done in a ball mill, which is a large cylindrical vessel containing a number of heavy balls. The ore is fed into the mill, and the balls are allowed to rotate. The friction between the balls and the ore causes the ore to be crushed and ground. The ground ore is then fed into a series of classifiers, which are used to separate the different sizes of particles. The finest particles are then fed into a series of flotation cells, where they are mixed with water and a small amount of oil. The oil causes the particles to form a froth, which is then skimmed off the surface of the water. This froth is then dried and smelted in a furnace, where the copper is extracted from the ore.

The second step in the metallurgy of copper is the refining of the metal. The copper obtained from the smelting process is usually of a low grade, and contains a number of impurities. These impurities must be removed before the copper can be used for most purposes. The refining process is usually carried out in a series of steps. The first step is to melt the copper in a furnace, and then to pour it into a mold. The mold is usually made of sand, and the copper is allowed to solidify. The solidified copper is then cut into pieces, and each piece is then placed in a solution of nitric acid. The acid dissolves the impurities, and the pure copper is left behind. The pure copper is then washed with water, and then dried. This is the final step in the refining process, and the pure copper is now ready for use.