

IRON IN INDUSTRY

Klymenko Daria – *student, group I-12.2*

Mikhno S. V. – *E L Advisor*

Steel is the world's most important material. Steel production requires iron, steel scrap and flux. Iron production requires: iron ore, coal and [limestone](#), dolomite. The iron ore is smelted to produce an impure metal called “hot metal” when liquid, or “pig iron” when solid. The hot metal is refined to remove impurities and to develop the desired composition. The liquid steel is continuously cast into semi-finished products which are processed into the desired shapes by rolling or forging. Iron is one of the most used metals, accounting 95% of world steel production. After oxygen, silicon and aluminium, [iron](#) is the fourth most plentiful element in Earth's crust.

Iron as a tool material is known since ancient times. The most ancient ironwork dates back to the 4th century BC. The oldest of the known iron tools – steel blade was found in the masonry of the pyramid of Cheops in Egypt. In ancient times iron was valued more than gold, in African tribes they gave 10 pounds of gold for 1 pound of iron. That is why ironmaking was by far the biggest industry in America until the late nineteenth century. The first iron works in America, called [Hammersmith](#), began operation in 1647.

Iron alloys have different characteristics, chemical and physical properties. Iron in our time has such a high demand because: 1) iron is the main component of steel and cast iron – the most important structural materials; 2) magnetic iron oxide (magnetite) is an important material in the production of long-term computer memory devices: hard drives, floppy disks, etc.; 3) depending on the impurities, the characteristics and properties of iron are changed, it can be used for different purposes, for example, unique ferromagnetic properties of some iron-based alloys contribute to their wide application in electrical, magnetic cores for transformers and motors; 4) iron is used as the anode in iron-nickel batteries and iron-air batteries. Almost all domestic appliances contain parts of alloys of iron. Iron is the foundation of modern civilization.

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