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**Annotation:** *This article provides information on the science of materials science, its development, raw materials, materials used in our daily lives, the composition, structure and properties of materials, semi-finished products, material processing, internal structures of materials, technological processes.*

**Keywords and phrases:** *materials science, construction, thermodynamics, crystallography, atomic crystals, copper ores, semi-finished products, metal microscopy.*

Material science as a science has been formed as a product of scientific research of many great world scientists. The development of science involves not only the improvement of the properties of existing materials, but also the creation of completely new construction materials arising from the requirements. Therefore, the main goal of science is not to study the composition, structure and properties of matter, but to study the relationship between structure (structure) and properties by observing the state of materials in each class in existing objects (constructions).

The development of material science is based on the development of physics, chemistry, mechanics as an important engineering science. Therefore, fundamental sciences such as the basics of thermodynamics, crystallography, atomic-crystal structure of solids, the theory of structural defects, the physical basis of deformation and decay of materials are widely used to explain the issues considered in it.

In his activity, man sees matter as a product of production. Matter is actually a piece of matter that has a certain stable mass. Such a material world is technically called "material" or "matter". This means that materials are the product of the labor process, which is used by mankind to make products that meet their needs. It is the primary tool in the production of materials. Without material, there can be no industrial processes. For example, ores (copper ores) must be mined to produce copper (material). Labor is also required to obtain raw materials, ie the ores are mined and sent to ore processing plants for processing, and then copper is extracted from the enriched ores. Copper is used to make various products. While copper is a raw material in the production of copper, copper itself is a raw material in the production of goods.

The labor process shows that in terms of quality, all raw materials can be divided into two types. Primary raw material or substance used to form the first material. However, the selected raw material is not always used 100% to produce this primary material, ie a certain part of it can be turned into waste. These wastes can also be used as raw materials for the production of other products, ie secondary raw materials. For example, sawdust (secondary raw material) from wood processing is used in the furniture industry.

In addition to materials for the manufacture of products, semi-finished products can also be used. A semi-finished product is a material that has been processed but not yet finished.

The processing of the material, i.e. the semi-finished product, to obtain the item must be continued again. Hence, a material (product) made in one production is a semi-finished product for another production.

The technical suitability of the material depends on its structure. The structure of a material is defined as the internal bonds that ensure its integrity, i.e., actively resist external and internal influences. According to these internal connections, the properties of the material can also change. Hence, the properties of materials are a philosophical concept that can only be distinguished by comparing them to each other. This concept includes quantitative and qualitative changes.

The science that studies the practical connections between the composition, structure, and properties of a material is called material science. The composition of a material means the chemical elements from which it is made. Most of the materials used in our daily lives are not just a single chemical element, but a set or combination of many elements. The concept of material structure is a broader concept, with macrostructure that can be seen with the naked eye or a simple magnifying glass, microstructure studied using special (500-2000 times magnification) optical instruments - metal microscopes, and exposure to electron microscopes or X-rays at 100,000 times magnification. includes observable supmicroscopic structures. The properties of a material are its chemical, physical and mechanical properties.

In the past, people used it as the material looked. At the time, they still had no idea about the structure of the material. He then proceeded to study the relationship between the property of a material and its internal structure. Only then was it possible to control the properties of the materials depending on the conditions of use of the products. Knowing the properties of the material and the conditions of use of its products, it is possible to determine in advance its durability and longevity.

As a result of the success of sciences such as chemistry, physics, and mechanics, the study of the internal structures of materials began. The further development of the science of materials science also depends on the achievements of these sciences. In recent years, as a result of scientific and technological progress, new materials are being created, more efficient methods of production are being discovered. On the other hand, the success of the science of materials science lies in improving the structure, discovering and improving effective methods of processing materials in the construction of products. The process of processing a raw material, changing its condition, type or shape, and making a material, semi-finished product or product is called a technological process. The success of the product in the intended period depends on how accurately and efficiently this technological process is performed, the correct choice of material. Material science is the scientific and theoretical basis for the management of material properties in the use of machines and mechanisms for human benefit.

As the volume of production increases, the pollution of the environment worsens the working conditions of materials, and the requirements for it are increasing. It is necessary to subordinate the products of nature to the interests of mankind, to rely on scientific principles in the protection of the environment, not only to neutralize the resulting secondary raw materials, but also to produce new materials and products from them. Finding and

implementing a complete technological process without waste is now of both economic and social importance.

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