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| **MATERIAL INFORMATION** |

**1.INTRODUCTION**

A material is the general name given to items used to accomplish a goal. Material has been important since the existence of mankind. The material, which remains important today, has become a critical item in the maintenance of technological developments from time to time. Today, the type of material is so high that it is impossible to explain the properties of these materials individually. Therefore, material groups in material learning, their internal structures and behaviors, factors and characteristics that affect these behaviors are explained.

Material knowledge is a fundamental element of engineering. Engineers need knowledge about materials in the design, production or operation stages according to their fields. Mechanical engineers work on lightweight, robust, heat-resistant materials; civil engineers, materials with good aesthetics and corrosion resistance; electrical engineers work to obtain high-voltage resistant materials.

**1.1. Classification of Materials**

In engineering, the word material evokes more solid materials. Solid materials can be collected and examined under 4 main groups;

-Metal Materials

-Ceramic Materials

-Organic Materials

-Composite Materials.

**Metal Materials;** they are alloys made with pure metals such as iron, copper, zinc, aluminum, and other elements. Metals are materials with excess hardness, high strength, ductility, electricity and thermal conductivity.

**Ceramic Materials;** materials such as stone, brick, concrete, glass, porcelain, which consist of inorganic compoundsmade by metals and non-metal elements. The application area of ceramic materials with very good resistance to corrosion and high temperatures, high hardness, brittle, high heat and electrical insulator is quite wide.

**Organic Materials;** they are large molecule compounds formed by non-metal elements such as hydrogen, oxygen and nitrogen. Wood consists of natural organics such as leather, resin, and artificial organics such as polycarbonate, polyamide, polyester, polyvinylchloride. Heat and electrical insulation are high.

**Composite Materials;** concrete, contraption,glass fiberreinforced plastic, enamated steel, sinter made of two or more materials with very different properties. In composites, lightweight, robust, perched temperature and wear resistant materials can be produced.

**1.2.Material Selection**

Important factors in material selection are listed below.

-Features

-Availability

-Economics

-Conformity to production.