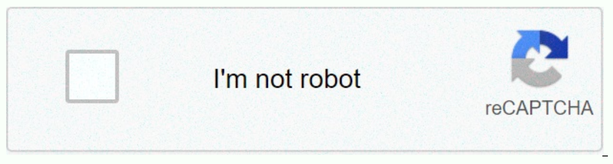

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Extensive property means

Contents Intensive properties do not change as the quantity or size of a substance changes. Examples: Color Hardness Density Freezing / boiling point The freezing point of 1 kg of water is 273 K. What is the freezing point of 2 kg of water? Solution: Since the freezing point is intensive, it does not change as the amount of a substance changes. Therefore, the freezing point of any amount of water is 273 K. Extended scale properties with the quantity or size of a substance. They must also have an additional property when changing the quantity of a substance. Examples: A rough diamond was found to have a mass of 2.2 kg. If 0.7 kg of diamond is cut off, what is the mass of the remaining piece? Solution: Since the mass is extensive, it should be additional. This means that the mass of the cut piece and the rest of the piece must add up to the original mass. 2.2 kg - 0.7 kg = 1.5 kg The ratio of two extended properties is an intensive property. The most common example is density, which is the ratio of mass and volume (both extensive), but is itself intensive, since it does not change as the amount of a substance changes. r=mV\rho=\dfrac{m}{V}r=Vm Any intensive property defined as a ratio of an extended property to mass is called a specific property. The most common example is the specific thermal capacity. An intensive property is one that does not depend on the mass of the substance or system. Temperature (T), pressure (P) and density (r) are examples of intensive properties. Examples of intensive ownership The properties of matter that do not depend on the size or quantity of matter in any way are referred to as an intensive property of matter. Temperatures, density, color, melting and boiling point, etc., are all intensive property as they will not change with a change in the size or quantity of matter. The density of 1 liter of water or 100 liters of water will remain the same, as is an intensive property. What is extended property? An extended property of a system depends on the size of the system or the amount of matter in the system. If the value of a system property is equal to the sum of the values for system parts, then such a property is called an extended property. Volume, energy, and mass are examples of extensive properties. Extensive property examples There are properties such as length, mass, volume, weight, etc. Suppose we have two boxes consisting of the same material, one has a capacity of four litres, while the other has a capacity of ten litres. The box with a capacity of ten litres will have a greater amount of matter than that of a four litre box. between intensive and extensive properties Difference between intensive and extensive properties INTENSIVE Independent property Dependent property Size does not change Size changes Cannot be calculated Can be calculated Can be easily determined Can not be easily determined Example: melting point, color, ductility, conductivity, pressure, boiling point, flash, freezing point, odor, density, etc. This flow of thermal energy and its conversion into different forms is governed by the principles of thermodynamics. It depends on the subject and the factors that determine the status of an issue. The thermodynamic properties of a system depend on certain parameters. Parameters or variables are classified as status functions and path functions as defined below: Status functions or status variables are parameters that depend only on the current state of the system and not on the path they have followed to reach that state. For example: System temperature. A path function is a parameter that depends on the path the system has followed to reach the current state. For example: The work is done with friction force. A status function depends only on the initial and final conditions, while a path function depends on the path taken to reach the final condition from the original condition. The thermodynamic properties of matter are also classified as intensive and extensive properties. This classification is based on the dependence of the property on the size or quantity of the material concerned. The intensive and extensive properties of the topic are discussed below. Recommended videos The intensive and extensive properties of matter help us determine the thermodynamic state of a system. They provide us with the coordinates needed to find the state of matter in thermodynamic terms. Call our mentors at BYJU'S for further support in intensive and extensive properties of matter. The properties of matter can be classified either as extensive or intensive and as physical or chemical. Recognize the difference between physical and chemical, and intensive and extensive, properties Key takeaways key points All properties of matter are either physical or chemical properties and physical properties are either intensive or extensive. Extensive properties, such as mass and volume, depend on the amount of matter measured. Intensive properties, such as density and colour, do not depend on the amount of this substance. Physical properties can be measured without changing the chemical identity of a substance. Chemical properties can only be measured by changing the chemical identity of a substance. Basic property of intensive value Terms: Any characteristic of the material that does not depend on the quantity of the Substance. extended property: Any characteristic of matter that depends on the amount of matter measured. physical property: Any which can be determined without changing the chemical identity of the substance. chemical property: Any characteristic that can only be determined by changing the molecular structure of a substance. All the properties of matter are either extensive or intensive and either physical or chemical. Extensive properties, such as mass and volume, depend on the amount of matter measured. Intensive properties, such as density and color, do not depend on the amount of matter. Both extensive and intensive properties are physical properties, which means that they can be measured without changing the chemical identity of the substance. For example, the freezing point of a substance is a natural property: when water freezes, it is still water (H2O)-it is just in a different physical state. Solids, liquids and gases: Water can exist in various situations, including ice (solid), water (liquid), and water vapour (gas). A chemical property, meanwhile, is any of the properties of a material that becomes apparent during a chemical reaction; that is, any quality that can only be determined by changing the chemical identity of a substance. Chemical properties cannot be determined only by viewing or contacting the substance. the internal structure of the substance must be affected in order to investigate its chemical properties. Physical properties Physical properties are properties that can be measured or observed without changing the chemical nature of the substance. Some examples of natural properties are: color (intensive) density (intensive) volume (extended) mass (extensive) boiling point (intensive): the temperature at which a substance boils melting point (intensive): the temperature at which a substance melts Natural properties: Matter has mass and volume, as evidenced by this concrete block. You can notice its mass by feeling how heavy it is when you try to get it; you can notice its volume by looking at it and observing its size. Mass and volume are both examples of extensive physical properties. Chemical properties Remember, the definition of a chemical property is that measuring this property should lead to a change in the chemical structure of the substance. Here are several examples of chemical properties: Heat of combustion is the energy released when a compound is subjected to complete combustion (burning) with oxygen. The symbol for the heat of combustion is DHc. Chemical stability refers to whether a compound will react with water or air (chemically stable substances will not react). Hydrolysis and oxidation are two such reactions and are both chemical changes. The flammableness refers to whether a compound will burn when exposed to the flame. Again, combustion is a reaction-usually a high temperature reaction in the presence of oxygen. The preferred oxidation state is the lower energy oxidation state that a metal will react to in order to achieve (if (if element is present to accept or donate electrons). There are two types of changes in matter: physical change and chemical change. Identify the basic characteristics of physical and chemical changes Key Takeaways Key points Physical changes only change the appearance of a substance and not its chemical composition. Chemical changes cause a substance to change to a completely new substance with a new chemical formula. Chemical changes are also known as chemical reactions. The components of a reaction are called reacting, and the final results are called products. Basic chemical change conditions: A process that causes a substance to change to a new substance with a new chemical formula. chemical reaction: Process involving breaking or producing diatomical bonds and converting one substance (or substances) into another. natural change: A process that does not cause a substance to become a fundamentally different substance. There are two types of changes in matter: physical change and chemical change. As the names show, a natural change affects the physical properties of a substance, and a chemical change affects its chemical properties. Many physical changes are reversible (such as heating and cooling), while chemical changes are often irreversible or only reversible with an additional chemical change. Physical & Chemical Changes: This video describes physical and chemical changes in matter. Natural change: Mixing a smoothie involves physical changes, but no chemical changes. Natural changes Another way to think about this is that a physical change does not cause a substance to become a fundamentally different substance, but a chemical change causes a substance to change into something chemically new. Mixing a smoothie, for example, involves two physical changes: changing the shape of each fruit and mixing many different pieces of fruit. Because none of the chemicals in smoothie ingredients change during mixing (water and vitamins from fruits remain unchanged, for example), we know that no chemical changes are involved. Cutting, tearing, breaking, grinding, and mixing are further types of physical changes because they change the shape, but not the composition of a material. For example, mixing salt and pepper creates a new substance without changing the chemical composition of any ingredient. Phase changes are changes that occur when substances melt, freeze, boil, condense, submit or deposit. They are also natural changes because they do not change the nature of the substance. Boiling water: Boiling water is an example of a natural change and not a chemical change because water vapor still has the same molecular structure as liquid water (H2O). If the bubbles were caused by the decomposition of a molecule in a gas H2O →H2 and O2), then boiling would be a chemical change. Change. Changes Chemical changes are also known as chemical reactions. The components of a reaction are called reacting, and the final results are called products. The change from reacting to products is stated with an arrow: Reacting → Products The formation of gas bubbles is often the result of a chemical change (except in the case of boiling, which is a natural change). A chemical change can also lead to the formation of sediment, such as the appearance of cloudy material when dissolved substances are mixed. Sepsis, combustion, cooking and rust are all further types of chemical changes because they produce substances that are completely new chemical compounds. For example, burnt wood becomes ash, carbon dioxide and water. When exposed to water, iron becomes a mixture of various hydrated iron oxides and hydroxides. Yeast ferments to produce alcohol from sugar. An unexpected color change or release of odor also often indicates a chemical change. For example, the color of the chrome element is determined by its oxidation state. a single chromium compound will change color only if it undergoes an oxidation or reduction reaction. The heat from cooking an egg changes the interactions and shapes of proteins in egg white, thus changing its molecular structure and turning egg white from translucent to opaque. The best way to be absolutely sure whether a change is natural or chemical is to perform chemical analyses, such as mass spectroscopy, in essence to determine its composition before and after a reaction. Reaction.