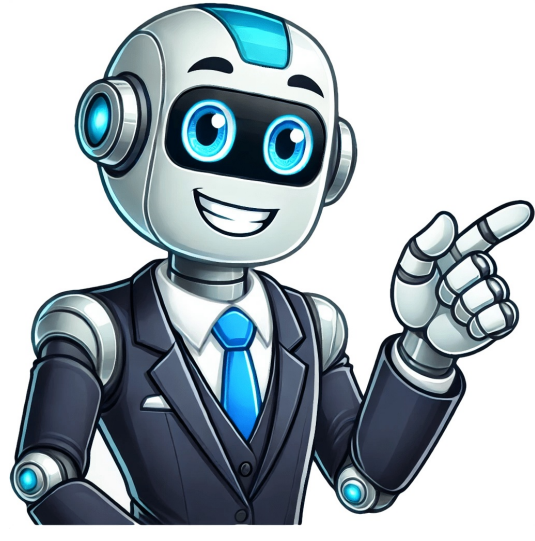


I'm not a robot



Intensive properties are those physical or chemical characteristics of matter that remain unaffected by the amount or size of the substance being considered. These properties do not depend on the mass, volume, or quantity of the substance and instead describe its inherent nature. In simpler terms, the value of an intensive property remains constant regardless of the sample's size or amount.Examples of Intensive Properties:To gain a better understanding, let us examine some common examples of intensive properties.Density:Density is the ratio of mass to volume and is defined as an intensive property. Regardless of the amount of substance being considered, its density remains constant. For example, the density of water at room temperature and pressure is approximately 1 g/cm, whether it is a glassful or an ocean.Melting Point and Boiling Point:The melting point and boiling point of a substance are both intensive properties. These values remain constant regardless of the quantity of the material. For instance, the melting point of pure water is 0 degrees Celsius, and its boiling point is 100 degrees Celsius, regardless of the sample size.Color and Luster:Color and luster are examples of intensive properties as they describe the appearance of a substance and remain unchanged regardless of the amount of the material. For instance, gold maintains its characteristic yellow color and shiny appearance, whether it is a small nugget or a large bar.Reflective Index:The refractive index of a substance, which describes how light bends when it passes through it, is an intensive property. It is a characteristic property of a material and remains constant irrespective of the quantity considered.What is Extensive Property?In contrast, extensive properties are directly proportional to the size or amount of matter being considered. These properties depend on the mass, volume, or quantity of the substance and change with the sample's size. Extensive properties vary as we increase or decrease the quantity of the substance.Examples of Extensive Properties:Mass:Mass is an extensive property that depends on the amount of matter present. If we increase or decrease the amount of substance, the mass changes accordingly. For instance, if we have 1 kg of a substance, doubling the amount to 2 kg will result in a proportional increase in mass.Volume:Volume is another extensive property that changes with the quantity of a substance. If we have a certain volume of a liquid, doubling the volume, for example, if we have 200 mL of water, doubling it to 400 mL will result in a proportional increase in volume.Weight:Weight is an extensive property. It is the force exerted on an object by gravity, and it depends on the mass of the object and the acceleration due to gravity. If we have a certain mass of an object, doubling the mass will also double the weight.Total Charge:The total charge of a system is an extensive property that depends on the number of charged particles. Increasing or decreasing the quantity of charged particles will alter the total charge proportionally.Differentiate Between Intensive and Extensive Property:Property AspectExtensive PropertyIntensive PropertyDefinitionDepends on the quantity or size of the substanceRemains constant regardless of the sample sizeExamplesMass, volume, energy, total chargeDensity, boiling point, melting point, refractive indexSizeDependenceVaries with the amount of substanceIndependent of the quantity of the substanceEquationRepresentationProportional to the size or amountNot proportional to the size or amountCharacterizationDescribes the inherent nature of the substanceEquilibrium AnalysisConsidered when calculating changes in systemsUsed to determine equilibrium conditionsMaterial DesignInfluences material properties and engineeringEssential for optimizing materials for specific usesThis tabular representation should provide a clear overview of the main distinctions between extensive and intensive properties, making it easier to comprehend their contrasting characteristics.Summary:-Intensive and extensive properties provide valuable insights into the nature and behavior of matter. Intensive properties are independent of the sample size, while extensive properties depend on the quantity of the substance being considered. By understanding these distinctions, students preparing for the JEE Mains can develop a solid foundation in the sciences and apply this knowledge to various scientific fields. Recognizing the importance of intensive and extensive properties opens doors to further exploration and understanding of the physical and chemical world. Intensive and extensive properties are characteristics used to describe the physical properties of substances in the fields of physics and chemistry. The terms intensive and extensive were first described by physicist Richard C. Tolman in 1917. Intensive properties are those that do not depend on the amount of substance present, while extensive properties are those that do depend on the amount of substance present. Examples include mass, volume, and energy. These properties change as the quantity of the substance changes. Here's a look at what intensive and extensive properties are, examples of them, and how to tell them apart. Intensive properties are bulk properties, which means they do not depend on the amount of matter that is present. Examples of intensive properties include: Each of these qualities remains the same for a substance no matter its quantity. Regardless of whether you have two or 2,000 liters of water, for example, the boiling point will always remain 100 degrees Celsius. Intensive properties are those that do not depend on the amount of sample, nor do they change according to conditions. Extensive properties do depend on the amount of matter that is present. An extensive property is considered additive for subsystems. Examples of extensive properties include: VolumeMassSizeWeightLengthEnergy The ratio between two extensive properties is an intensive property. For example, mass and volume are extensive properties, but their ratio (density) is an intensive property of matter. While extensive properties are great for describing a sample, they aren't very helpful in identifying it because they can change according to sample size or conditions. One easy way to tell whether a physical property is intensive or extensive is to take two identical samples of a substance and put them together. If this doubles the property (e.g., twice the mass, twice as long), it's an extensive property. If the property is unchanged by altering the sample size, it's an intensive property. Understanding whether a property is intensive or extensive is crucial for characterizing and identifying substances accurately in science.The two types of physical properties of matter are intensive properties and extensive properties.Intensive properties do not depend on the quantity of matter. Examples include density, state of matter, and temperature.Extensive properties do depend on sample size. Examples include volume, mass, and size.Intensive and extensive properties are characterized by how they change with the amount of substance present. Intensive properties are those that do not depend on the amount of substance present, while extensive properties are those that do depend on the amount of substance present. Examples include mass, volume, and energy. These properties change as the quantity of the substance changes. Here's a look at what intensive and extensive properties are, examples of them, and how to tell them apart. Intensive properties are bulk properties, which means they do not depend on the amount of matter that is present. Examples of intensive properties include: Each of these qualities remains the same for a substance no matter its quantity. Regardless of whether you have two or 2,000 liters of water, for example, the boiling point will always remain 100 degrees Celsius. Intensive properties can be used to help identify a sample because these characteristics do not depend on the amount of sample, nor do they change according to conditions. Extensive properties do depend on the amount of matter that is present. An extensive property is considered additive for subsystems. Examples of extensive properties include: VolumeMassSizeWeightLengthEnergy The ratio between two extensive properties is an intensive property. For example, mass and volume are extensive properties, but their ratio (density) is an intensive property of matter. While extensive properties are great for describing a sample, they aren't very helpful in identifying it because they can change according to sample size or conditions. One easy way to tell whether a physical property is intensive or extensive is to take two identical samples of a substance and put them together. If this doubles the property (e.g., twice the mass, twice as long), it's an extensive property. If the property is unchanged by altering the sample size, it's an intensive property. Understanding whether a property is intensive or extensive is crucial for characterizing and identifying substances accurately in science.The two types of physical properties of matter are intensive properties and extensive properties.Intensive properties do not depend on the quantity of matter. Examples include density, state of matter, and temperature.Extensive properties do depend on sample size. Examples include volume, mass, and size.Intensive and extensive properties are characterized by how they change with the amount of substance present. Intensive properties are those that do not depend on the amount of substance present, while extensive properties are those that do depend on the amount of substance present. Examples include mass, volume, and energy. These properties change as the quantity of the substance changes. Here's a look at what intensive and extensive properties are, examples of them, and how to tell them apart. Intensive properties are bulk properties, which means they do not depend on the amount of matter that is present. Examples of intensive properties include: Each of these qualities remains the same for a substance no matter its quantity. Regardless of whether you have two or 2,000 liters of water, for example, the boiling point will always remain 100 degrees Celsius. Intensive properties can be used to help identify a sample because these characteristics do not depend on the amount of sample, nor do they change according to conditions. Extensive properties do depend on the amount of matter that is present. An extensive property is considered additive for subsystems. Examples of extensive properties include: VolumeMassSizeWeightLengthEnergy The ratio between two extensive properties is an intensive property. For example, mass and volume are extensive properties, but their ratio (density) is an intensive property of matter. While extensive properties are great for describing a sample, they aren't very helpful in identifying it because they can change according to sample size or conditions. One easy way to tell whether a physical property is intensive or extensive is to take two identical samples of a substance and put them together. If this doubles the property (e.g., twice the mass, twice as long), it's an extensive property. If the property is unchanged by altering the sample size, it's an intensive property. Understanding whether a property is intensive or extensive is crucial for characterizing and identifying substances accurately in science.The two types of physical properties of matter are intensive properties and extensive properties.Intensive properties do not depend on the quantity of matter. Examples include density, state of matter, and temperature.Extensive properties do depend on sample size. Examples include volume, mass, and size. All matter has chemical and physical properties. There are some substances having unique properties whereas other compounds may have similar properties. Physical properties are

properties of matter that can be observed without changing the chemical composition of matter. Physical properties can be divided into two groups as intensive properties and extensive properties. Intensive properties, also known as bulk properties, do not depend on the amount of matter. Extensive properties are physical properties that depend on the amount of matter. This is the main difference between intensive and extensive properties.

Key Areas Covered

1. What are Intensive Properties
- Definition, Examples
2. What are Extensive Properties
- Definition, Examples
3. What is the Difference Between Intensive and Extensive Properties
- Comparison of Key Differences

Key Terms: Boiling Point, Bulk Properties, Density, Energy, Extensive, Intensive, Matter, Melting Point, Physical Properties

What are Intensive Properties? Intensive properties are physical properties that do not depend on the amount of matter. This means these properties are the same even if we measure them with different amounts of matter. Let us consider some examples in order to understand the nature of these properties.

Melting Point and Boiling Point These are intensive properties. Regardless the amount or the size of the substance, the value obtained for the melting point or boiling point of that substance is the same. For example, the boiling point of water is 100oC. Even if we increase the temperature of 100 mL of water, it will boil at 100oC. If we increase the temperature of 500 mL of water, it will also boil at 100oC.

Density Density is also an intensive property. The density of a substance is its mass per unit volume. Therefore, no matter how much amount we have, we only measure the mass per unit volume. But this is true only for homogeneous systems.

Color The color of a substance is the same for any amount of matter.

Figure 1: Color is an Intensive Property

Temperature When considering the temperature of a substance, the temperature at one point is similar to the temperature at a different point of the same substance. Since these properties do not depend on the size or the amount of matter, they can be used in the identification of a substance. For example, we can get a rough idea about an unknown sample by measuring the melting point and boiling point of that sample and then comparing with a book value.

Extensive properties are physical properties that depend on the amount of matter. This means these properties can be changed when the amount or the size of the matter is changed. However, these are physical properties that can be observed without changing the chemical composition of matter.

Volume The volume of a substance is different for different amounts.

Figure 2: Volume is an Extensive Property

Mass Energy Particle number

Definition Intensive Properties: Intensive properties are physical properties that do not depend on the amount of matter.

Extensive Properties: Extensive properties are physical properties that depend on the amount of matter.

Quantity Intensive Properties: Intensive properties are independent of the amount of matter.

Extensive Properties: Extensive properties depend on the amount of matter.

Examples Intensive Properties: Some examples of intensive properties include melting point, boiling point, density, etc.

Extensive Properties: Some examples of extensive properties include volume, mass, energy, etc.

Conclusion Physical properties of matter are the properties that can be measured without altering the chemical composition of matter. Physical properties are in two types as intensive properties and extensive properties. The main difference between intensive and extensive properties is that intensive properties do not depend on the amount of matter whereas extensive properties depend on the amount of matter.

References:

1. Helmenstine, Anne Marie. Understand Intensive and Extensive Properties. ThoughtCo, Available here.
2. Helmenstine, Anne Marie. Explanation and Examples of Physical Properties. ThoughtCo, Available here.
3. Intensive and extensive properties. Wikipedia, Wikimedia Foundation, 29 Nov. 2017, Available here.

Image Courtesy:

1. Nile red 01 By Kuebi = Armin Kbelbeck Own work (CC BY-SA 3.0) via Commons Wikimedia
2. Inscribed cone sphere cylinder By Cmglee Own work (CC BY-SA 3.0) via Commons Wikimedia

What is the main difference between extensive and intensive physical properties.

- wuripeji
- <http://cnfashionhotel.com/userfiles/file/d9ccd496-459b-4e08-8501-3bbe2d972e5e.pdf>
- how to cover asbestos roof
- como sacar um cheque no banco do brasil
- which mushrooms are safe during pregnancy
- yuga
- <http://ywjxz.com/userfiles/image/2025/07/file/f4f1e2d4-648a-4ec9-8a7a-f014949b20eb.pdf>
- 2000 4.3 vortec specs
- <http://mehmetalakir.com/userfiles/file/xitawowuvawaj-luxonatisasa.pdf>