Physical Properties & Characteristic Properties vs Non-Characteristic properties TB: p. 175, 178-189



Physical Properties

- These can be observed or measured without changing the make-up of the matter of the object
- These properties can be used to describe the object
- Two categories: non-characteristic and characteristic properties

Physical Properties Include:

- Appearance
- Texture
- Color
- Odor

- Melting Point
- Boiling Point
- Density
- Solubility

Non-Characteristic Properties

A non-characteristic property is <u>a physical</u> or chemical property that is not unique to one particular substance.

Basically: A NCP can be used to describe many substances

Non-Characteristic Properties Examples

- Temperature,
- Mass,
- Shape,
- Colour,
- Volume, &
- Acidity and alkalinity (pH)

Temperature

- In science, temperature is measured in degrees Celsius (°C) or sometimes in Kelvin (K)
- To measure temperature we use a thermometer



Mass



Shape and Color

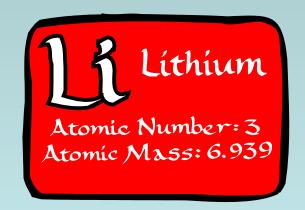












Acidity and Alkalinity

Cucumbers

Collards

Seaweed

Asparagus

Papayas

Melons

Grapes

Apricots

Canteloupe

Honeydew

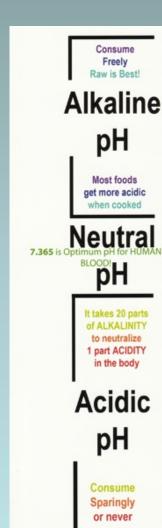
Figs & Dates

Strawberries

Tangerines

Lemons &Limes Mangoes

Onions



10.0

9.0

8.0

5.0 Acidic

High Alkaline Ionized Water

Raw Spinach

Raw Broccoli Artichokes **Brussel Sprouts** Olive Oil Herbal & Green Tea Most Lettuce Borage Oil Raw Zuochini Sweet Potato

Raw Peas Apples Almonds Avocados Tomatoes Fresh Corn Mushrooms Turnip Olives

Red Cabbage Raw Celery Cauliflower Carrots Potato Skins Alfalfa Grass Sprouted Grains Raw Eggplant Alfalfa Sprouts Raw Green Beans Beets & Greens Blueberries

Pears Soybeans **Bell Peppers** Radish Rhubarb Pineapple Cherries Millet

Wild Rice Most Tap Water

Municipalities adjust tap water to be +/- 7.0 Optimum pH for HUMAN BLOOD is 7.365 Oils, except Olive

Milk, Yogurt Fruit Juices Cooked Spinach Most Grains Soy Milk Coconut Eggs Fish

Cooked Beans Chicken & Turkey Beer Sugar Canned Fruit White Rice

Reverse Osmosis

Water

White Bread Peanuts

Pistachios Beef Lamb Pork Wine Shellfish **Pastries** Cheese **Goat Cheese** Kidney Beans Lima Beans Plums **Processed Juices** Rye Bread Spelt

Brown Rice Barley Cocoa Potatoes w/o Skins Pinto Beans Navy Beans Garbanzos Lentils Black Beans

Distilled & Purified Water Blackberries

Cranberries

Prunes

Sweetened Fruit Juice Black Tea Pasta Pickles Stress Worry Lack of Sleep Overwork Tobacco Smoke

Peaches Oranges Grapefruit Bananas Butter, fresh, unsalted Cream, fresh, raw Milk, raw cow's Rice & Almond Milk Sprouted Wheat Bread Oats Liver Oysters

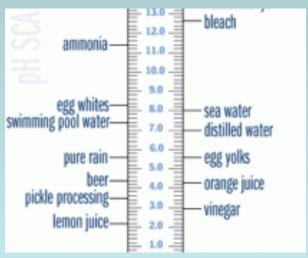
Cold Water Fish Salmon Tuna Goat's Milk Butter, salted Rice Cakes Cooked Corn Wheat Bran Rhubarb Molasses

Most Bottled Water & Sports Drinks

Most Nuts Tomato Sauce Buttermilk Cream Cheese Popcorn Chocolate Vinegar Sweet 'N Low Equal Aspartame NutraSweet Processed Food Microwaved Foods

Colas! (Off the Chart)





Characteristic Properties

A characteristic property is <u>a physical or</u> chemical property that is unique to a particular substance.

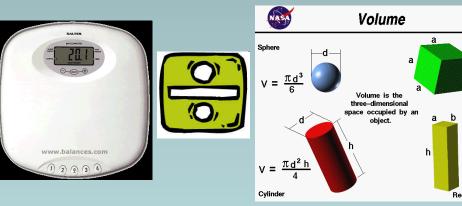
Basically: A CP can be used to identify a substance.

Characteristic Properties Examples

Density: The amount of matter in an object, which is calculated by dividing the mass by the

volume





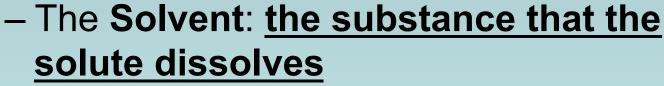
Magnetism: The force of attraction between a magnet and a magnetic object

Characteristic Properties Examples (cont.)

Solubility: <u>A measure of how well a substance can dissolve in another substance.</u>



– The Solute: the substance that is dissolved





– The Solution: the result of mixing a solute and a solvent



Characteristic Properties Examples (cont.)

Melting Point: The temperature at which a substance changes from a solid to a liquid

Boiling Point: The temperature at which a substance changes from a liquid to gas

room (invisible)

0 15 50 100 °C

melting boiling point

Examples

- Freezing point of Water: 0°C
 - Liquid water will freeze to solid ice at 0°C
- Melting Point of Ice: 0°C
 - Solid ice will melt to liquid water at 0°C
- Boiling Point of Ice: 100°C
 - Liquid water will change into a gas at 100°C

Example: The English Oak



Characteristic Property

Density = 720 kg/m³

Non-Characteristic Property

 Light yellow to Medium brown in colour

Non-Characteristic Property

25-30 m tall

Example # 1

Below is the properties of unknown substances. Which of the following is a characteristic property?

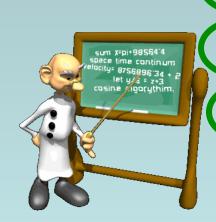


- 1. Mass of 346 grams
- 2. Red and circular in shape
- 3. Temperature of 25°C
- 4. Boiling Point of 204°C

Example # 2

Identify <u>all</u> of the noncharactertistic properties listed below

- 1. Volume of 200 ml
- 2. Square shaped
- 3. Temperature of 45°C
- 4. Freezing Point of 204°C
- 5. Density of 24 g/ml





Exam like question!!!

Julie has a unknown substance in a beaker. Its properties are described in the chart to the right.

Using the substance chart below, identify which substance Julie has in the beaker.

Mass	103.5 g
Color	yellow
Magnetic	No
Volume	50 ml

	Density	Color	Magnetic
Iron	7.86 g/ml	Yellow-Grey	Yes
Water	1 g/ml	Colorless	Men hill
Nitroge	0.00125 g/ml	Yellow	
n			
Sulphyr	2.07 g/ml	Yellow	N

Remember!

Characteristic Properties	Non-Characteristic Properties	
CO ₂ - Turns limewater cloudy	- Color	
O ₂ - Ignites glowing splint	- Shape	
H ₂ - Pops in presence of	- Texture	
flame	- Size	
Density, DENSITY = m/V	- Mass	
Melting Point	- Temperature	
Freezing Point	- Odor	
Boiling Point	- Weight	
	- Volume	