**PHYISCAL AND CHEMICAL PROPERTIES**

*S1-2-07: What properties classify elements as metals, non-metals or metalloids?*

1. Complete the missing information in the table below:

|  |  |  |
| --- | --- | --- |
| **Physical Properties**  Definition: | | |
| *Qualitative* | | *Example* |
| **State/Phase** | Solid, liquid, gas or plasma |  |
| **Malleability** |  | Gold is malleable  Glass is *brittle* |
| **Ductility** |  | Copper is ductile  Coal is not ductile |
| **Texture** | Appearance and feel of the surface |  |
| **Lustre** | Degree to which a material reflects light |  |
| *Quantitative* | | |
| **Solubility** |  | Salt is soluble in water  Pepper is not soluble in water |
| **Hardness** | A measure of resistance to being scratched |  |
| **Conductivity** | Ability to conduct heat or electricity |  |
| **Viscosity** | A measure of resistance to flow |  |
| **Density** |  | Lead has high density  Water has a density of 1g/mL |
| **Melting Point** |  |  |
| **Boiling Point** | Temperature of boiling/condensing | Water boiling at 100oC |

1. Looking at the table of physical properties, what do you think the words “qualitative” and “quantitative” mean for physical properties?

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| **Chemical Properties**  Definition: | | |
| **Reactivity** | Degree to which a material chemically interacts  (in water or acid etc.) |  |
| **Combustibility** |  | Gasoline is combustible  Water is not combustible |
| **Toxicity** | Degree to which a material causes bodily harm |  |

1. What property(s) of the following substances make them important for the stated uses?
   1. Diamond is used in drill bits that travel through rock.

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* 1. Antifreeze is used as a car coolant.

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* 1. Helium is used to fill the Good Year blimp.

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* 1. Hydrogen is not used to fill the Good Year blimp.

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* 1. Copper is used in house wiring.

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* 1. Aluminum is used on the cooling fins of a lawn mower engine.

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* 1. Mercury is used as an electrical switch when movement is needed.

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* 1. Some cooking pots have a copper bottom.

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1. State whether a *physical* (**P**) or *chemical* (**C**) property is being described, and list the property described:
   1. Aspirin tablets can be pulverized with a hammer. (**P**) / (**C**) : \_\_HARDNESS­\_\_\_\_\_\_
   2. Lithium metal burns in oxygen with a bright red flame. (**P**) / (**C**) : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Mercury is a liquid at room temperature. (**P**) / (**C**) : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. Gold metal does not react with hydrochloric acid or nitric acid. (**P**) / (**C**) : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   5. Hemoglobin molecules have a red colour. (**P**) / (**C**) : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   6. An iron nail is attracted to a magnet. (**P**) / (**C**) : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   7. Diamonds are hard substances. (**P**) / (**C**) : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   8. Chlorine gas has a yellowish green colour. (**P**) / (**C**) : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   9. Beryllium metal vapour is extremely toxic to humans. (**P**) / (**C**) : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   10. Ski goggles become fogged. (**P**) / (**C**) : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   11. A rubber band can be stretched. (**P**) / (**C**) : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   12. A firecracker explodes when lit. (**P**) / (**C**) : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   13. A dry leaf can be crushed. (**P**) / (**C**) : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Write down the websites you used to find your information: