**Absence work**

 **09 April 2020**

**Ceramics**

**Read the information below, then answer the questions that follow.**

Ceramics are non-metallic solids with high melting points and are used extensively to make useful materials that we use in everyday life. They are good conductors of heat and electricity, but are very brittle (snap easily, not flexible). We will be looking at three types of ceramics today: soda-lime glass, borosilicate glass, and clay. Soda-Lime glass is a type of ceramic because it is a non-metallic solid, and made without carbon. It is generally transparent, can be moulded when hot and can be brittle when thin. It is made from heating sand, limestone and sodium carbonate.

Borosilicate glass is made from sand and boron trioxide and has a higher melting point than soda-lime glass.

Clay is a soft, opaque material when it is dug out of the ground so it can be moulded by shaping the wet clay into different shapes. When it’s heated in a furnace at high temperatures, it hardens to make pottery or bricks.

**Copy out the questions below and write your answers in full sentences.**

**Checkpoint questions:**

1. What 3 substances are heated to make soda-lime glass?
2. What two substances are heated to make borosilicate glass?
3. Define opaque. Which of the three ceramics is opaque?

**Copy the key knowledge table into your exercise books.**

**Key knowledge- Do your look, cover, write check by learning the answers to the questions below.**

|  |  |
| --- | --- |
| Define ceramics. | Non-metallic solids with high melting points.  |
| State two properties of ceramics. | Good conductors of heat and electricity, very brittle. |
| Explain how soda-lime glass is made. | By heating sand, limestone and sodium carbonate. |
| Explain how borosilicate glass is made. | By heating sand and boron trioxide. It has a higher melting point than soda-lime glass. |
| Describe clay. | Clay is a soft, opaque material, which is dug out of the ground. |
| Explain how clay ceramics are made. | By digging up and shaping wet clay, before heating it, which hardens it.  |

**Complete the questions below in your exercise book.**

**Recall Quiz:**

1. *We define ceramics as…*
2. *One useful property of ceramics is that they are…*
3. *However, they also tend to be very \_\_\_\_\_ (break easily).*
4. *Soda-lime glass is made by heating \_\_\_\_, \_\_\_\_ and \_\_\_\_ together.*

The Application task questions are based on the table below.



**Application Task – I do**

Explain why a manufacturer would be far more likely to make windows from soda-lime glass than clay. Use data from the table of properties in your answer. (1)

Answer: Soda-lime glass is **transparent** (see-through), while clay is **opaque**.

**Application Task - We do**

Write your answers to the questions in completed sentences in your exercise book.

Often, clay mugs will be covered in a layer of waterproof glaze before being used to carry liquids. Suggest why this might be.

Use data from the table of properties in your answer. (1)

Clay mugs must be covered in a waterproof glaze before carrying liquids ………………

**Application Task – You do**

Write your answers to the questions in completed sentences in your exercise book.

1. Name the safety risk linked to handling and using ceramics. State one injury you might suffer.
2. Suggest why borosilicate glass is often used to make boiling tubes in a science lab, rather than soda-lime glass.