



University of
Southern
Queensland

NO WASTE Project: Glass Challenge for Students

- **Ancient to Modern**
- **Every Day and Industrial Uses**
- **Discovery and Quiz Challenge**

A/Prof Andreas Helwig
Centre for Future Materials

16th August 2022



Acknowledgement of Country

UniSQ acknowledges the traditional owners of the
land on which we gather.

We pay our respect to Elders – past, present, and
emerging.

(1) What is Glass? What was the first glass used by humans in the Neolithic times?



- **Silicon Dioxide +**
- **Other oxides that act as a fluxing and physical property modifiers.**
- **Chilled quickly – i.e., none to little crystallisation, i.e. an amorphous solid.**

Your 1st Task: Discuss and answer

- *Was it naturally occurring or man-made when first used?*
- *What is the difference between (quartz) glass and quartz crystal?*
- *Which rock does obsidian glass have similar chemical composition?*
- *How long do you think it takes to make an obsidian arrowhead from a boulder of the parent rock?*
- *What is an obsidian blade?*
- *What is a fulgurite?*



(1) cont. Who made the first glass and when?

Your 2nd Task: Discuss and answer



- *How was the first glass discovered and made?*
- *Which of the vessels shown is Greek or Roman?*
- *How much do you think a normal drinking glass would have cost in Roman times (20 AD)?*
- *Why is glass translucent?*
- *Can you be sunburnt by sunshine coming through a glass pane of a window?*
- *Does glass act as a thermal barrier to long wave heat radiation; e.g., from a fireplace, combustion stove or electric radiant heater?*



(2) Glass we use in the 21st Century



Your 3rd Task: Discuss & Answer

- *How many of the 8 common glasses in section 2 can you recognise from home?*
- *Can you match the pictures in section 2 to the 8 different types of glass?*
- *Why do car wind screens have laminated glass? Are car windows laminated glass?*
- *How did the swimming pool glass fence crack and shatter?*
- *What oxides make red or pink coloured glass? Can you find their elements in the periodic table?*
- *How does extreme cold effect window glass?*
- *Which of the 8 glass types can be recycled?*

(2) Making glass from middle ages to 21st Century



What type of glass would you use for structural and roof glass? Why?

Your 4th Task: Matching Industrial Glass description to pictures

- *Read/discuss section 6 and see if you can match the different types of industrial glass to the pictures. (Ask questions as needed.)*
- *Which of these can currently be recycled?*
- *What is the UniSQ NO WASTE Research and Development Project about?*



University of
Southern
Queensland

Who wants the future to change for the better?
Be a change maker, be an engineer!
Join UniSQ in your studies!

Andreas.Helwig@usq.edu.au

NOWASTE@usq.edu.au

unisq.edu.au

