

Chem to Go

- Identify the following as physical or chemical properties.
a) height b) flammability c) tarnishing d) hardness
- Calculate the density for an object that has a mass of 2.53 g and a volume of 4.54 cm³.
- Give another example of an intensive physical property. Explain your choice.
- A collection of glass fragments was found in the car of the prime suspect, Bob. The glass found at the crime scene was from a crystal goblet made of leaded glass. Using the data obtained by the forensic chemists and the graph-slope method, determine if the glass in Bob's car could be from the crime scene.

Glass Data from Bob's Car		
Set	Mass (g)	Volume (cm ³)
0	0.0	0.0
1	2.0	0.71
2	4.2	1.5
3	6.5	2.1
4	7.9	2.8

Type of glass	Density (g/cm ³)
quartz glass	2.2
borosilicate glass	2.3
soft glass	2.6
leaded glass	2.8

- If different glass manufacturers use different window glass formulations, density measurements can be used to help identify the manufacturer of a particular glass fragment. How? Explain.
- Preparing for the Chapter Challenge*

You will want your data used in the challenge's crime scene to be realistic. Look at the four types of glass presented in *Question 4*. Using any resource you choose, find an example of how each of these types of glass may be present at a typical crime scene, such as a kitchen, office, or bedroom. In your *Active Chemistry* log, create a table to organize your findings, including columns for type of glass, density, uses, and examples of crime scenes where you may find that type of glass.

Inquiring Further

Glass used by car manufacturers

Research the density of the glass used by three different automakers. Obtain and test a windshield sample from a local glass shop or car impound lot under the supervision of a responsible adult. Share this information with your classmates by creating a detailed profile document of each of the windshield types, including comparing your experimental results to the known data you researched.