



Interdisciplinary Education Group

Brainstorming: Properties of a Liquid Crystal

1. What are some properties of a liquid? Is a liquid hard or soft? Can it flow or does it stay in one place even when there is space for it to move around?
2. What are some properties of a solid (for example a crystal)? Is a solid hard or soft? Can it flow or does it stay in one place even when there is space for it to move around?
3. A liquid crystal is a phase of matter between a liquid and a crystal. Based on your answers to questions one and two, what do you think are the properties of a liquid crystal?
4. At a high temperature, is a substance more likely to be a liquid or a solid? (Hint: Think of water.)
5. At a low temperature, is a substance more likely to be a liquid or a solid? (Hint: Think of water.)
6. At what temperature do you think a substance might be a liquid crystal? Will the temperature be high, low, or in the middle?

Brainstorming: Properties of a Liquid Crystal [ANSWERS]

1. What are some properties of a liquid? Is a liquid hard or soft? Can it flow or does it stay in one place even when there is space for it to move around??

Possible answers: *Liquids are wet, fluid-like, and soft. They can be easily penetrated. When a container is completely filled with a liquid, the liquid can take the shape of that container.*

2. What are some properties of a solid (for example a crystal)? Is a solid hard or soft? Can it flow or does it stay in one place even when there is space for it to move around?

Possible answers: *Solids are hard and rigid materials. They are not as flexible as liquids because their atomic arrangement is more structured. It requires more force to break solids than to penetrate liquids. Solids do not take the shape of their containers.*

3. A liquid crystal is a phase of matter between a liquid and a crystal. Based on your answers to questions one and two, what do you think are the properties of a liquid crystal?

A liquid crystal has some properties of a solid and some properties of a liquid. Liquid crystals are like liquids because they're fluid-like. Liquid crystals are also like solids because their atoms are somewhat structured.

4. At a high temperature, is a substance more likely to be a liquid or a solid? (Hint: Think of water.)

At a high temperature, a substance is more likely to be in the liquid phase because the material is more flexible and its structure less ordered.

5. At a low temperature, is a substance more likely to be a liquid or a solid? (Hint: Think of water.)

At a low temperature, a substance is more likely to be in the solid phase because the material is more rigid and its atomic structure more compact.

6. At what temperature do you think a substance might be a liquid crystal? Will the temperature be high, low, or in the middle?

If a material is a solid at a low temperature and a liquid at a high temperature, then the liquid crystal phase should be at a temperature that's between high and low.

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