

States of Matter

Learning Objective:

Research the temperature in degrees Celsius ($^{\circ}\text{C}$) at which materials change state.

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**What is
temperature?**



Definition:



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**How can we
measure
temperature?**

**What
units of
measurement
can we use?**



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Temperature is the measure of how hot or cold something is. Temperature is measured in degrees. There are several scales for measuring temperature but the one used most widely in Europe is degrees Celsius ($^{\circ}\text{C}$). America and some other places also use degrees Fahrenheit ($^{\circ}\text{F}$). These are both named after the scientists who developed these temperature scales.



**Anders Celsius
(1701-1744)**



**Daniel Gabriel
Fahrenheit (1686-1736)**

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Thermometers are used to measure temperature. Some thermometers are made of glass and have liquid mercury inside. The mercury expands as it heats and so travels up the thermometer. The scale on the thermometer shows what the temperature is.

There are also electrical temperature sensors that can be used to find out what the temperature is. These can be connected to a computer which gathers the data.



You have to be careful with mercury thermometers. If they break, exposure to the mercury is very harmful.



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**What is it
called when liquid
water is turned
into a solid?**

**At what
temperature does
this happen?**



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When water freezes it turns from a liquid to a solid. The freezing temperature of water is 0 °C.



How long do you think it would take for this bowl of ice cubes to melt in this classroom?



What if the room was 10 °C warmer?

What if the room was 10 °C colder?

What if there was just one ice cube?

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**Can you think
of some other
solids that melt
when heated?**

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Have you ever wondered how plastic toys are made?



Plastic granules, like these, are heated until they melt to form a liquid.



The liquid plastic is injected into moulds in the shape of the product being made. When it cools and solidifies, the plastic part can be removed from the mould.

Plastic injection moulding is used to make everything from toothbrushes to car bumpers!

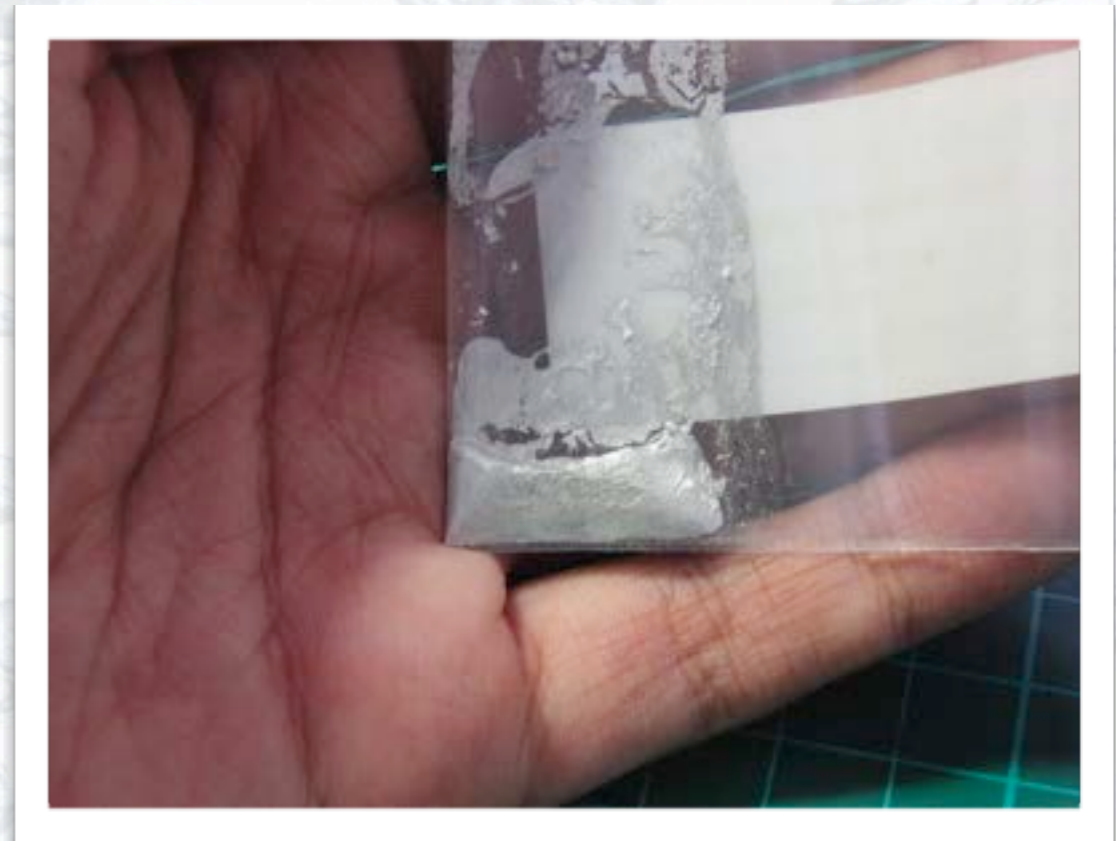
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Some materials have surprising melting points!



You might expect all metals to have high melting points, but Gallium has a melting point of just 29 °C! That means that the temperature of your skin is enough to melt it!



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**Now it's time to
do your own research
into the temperatures at
which materials
change state!**



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