sales@brannan.co.uk
+44 (0)1946 816600
brannan.co.uk

Product Information

Why has the liquid in my thermometer split / separated?

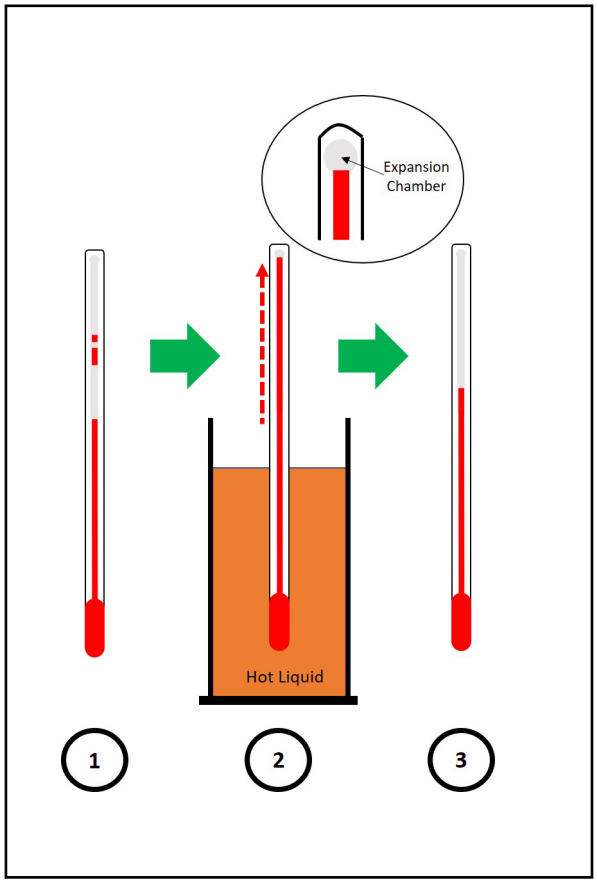
Liquid column separation is where portions of the thermometer filling have separated from the main column, causing an air bubble to appear.
Split columns in thermometers are rare, however the following can all contribute to the cause:

- During transit or other situations where excessive jarring occurs.
- Sharp changes in temperature. E.g. if the thermometer has been kept at room temperature and then very quickly placed into a 200C liquid the spirit is more likely to split.

How can I re-join the split liquid in my thermometer?

Split columns are easily repairable by following one of the 3 repair options:

1. **Heating**
   Heating the thermometer is often the quickest and most successful way of repairing split thermometers.



WARNING – This method must only be tried if the thermometer contains an expansion chamber, otherwise the liquid expansion will break the thermometers glass.

(1) Split liquid column

(2) Place the thermometer into a hot liquid. The liquid needs to be sufficiently hot so that the thermometers filling rises into the expansion chamber. If too hot of a liquid is used the thermometers liquid will completely fill the expansion chamber and cause the glass to break.
The thermometer must be placed gradually into the hot liquid to minimise the risk of the thermometer breaking. This can be done by quickly dipping the thermometers bulb in and out of the hot liquid.
As the main column of the thermometer rises, it will pick up any split liquid on the way up.
Any remaining split liquid will re-join once inside the expansion chamber.
Do not allow the expansion chamber to fill by more than a half to prevent breakage.

(3) As the thermometer cools back down, all liquid should now be re-joined.

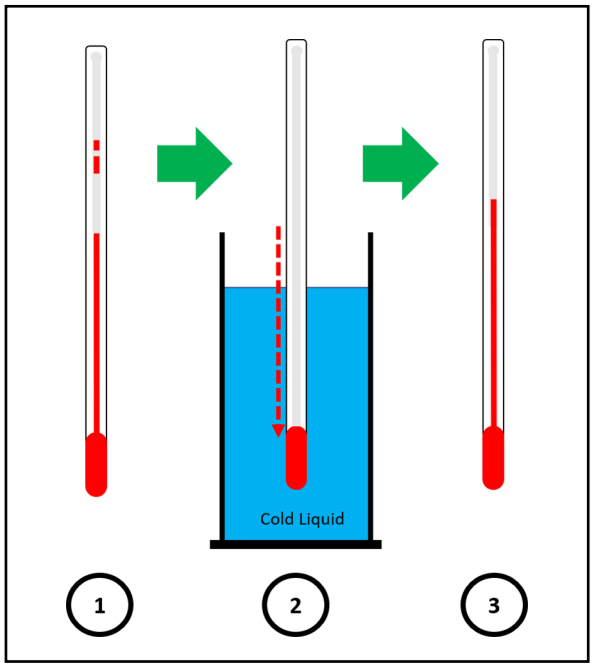
* It may be necessary to repeat the above steps until all split liquid has re-joined.

sales@brannan.co.uk
+44 (0)1946 816600
brannan.co.uk

Product Information

2. Cooling

If it is not possible to heat the thermometer, another option to repair a separated column is to cool it down.



(1) Split liquid column

(2) Place the thermometer into a cold liquid so that the liquid filling retreats into the bulb.
The thermometers range will depend on how cold this liquid needs to be. A good option is to use Dry Ice and Alcohol.
Once the liquid is fully contained in the bulb give it a light tap.

(3) Take the thermometer out of the beaker and allow it to warm.
As the column rises all separated liquid should be re-joined.

* It may be necessary to repeat the above steps until all split liquid has re-joined.

3. Centrifugal method

If you have the available equipment, a centrifuge can be used to re-join a separated column by forcing the liquid down the capillary.

(1) Place the thermometer, bulb down, into the centrifuge.

(2) Turn on the centrifuge for approx. 10 seconds to force all the liquid past the separation.
* If the centrifugal force is not below the entire column, the liquid may split further.

I still cannot re-join the liquid in my thermometer

If you are still unable to re-join the liquid in your thermometer, please return it to us & we should be able to repair it.

Preventing further splits

To prevent further separation of the thermometer:

(1) Always use and store the thermometer in a vertical position.
(2) Avoid large sudden changes in temperature.
(3) Avoid excessive jarring actions.

sales@brannan.co.uk
+44 (0)1946 816600
brannan.co.uk

Product Information

Thermometer accuracy

All measuring instruments have an accuracy tolerance. A glass laboratory thermometer or digital probe thermometer for educational use will typically have an accuracy of +/- 1.0°C or 1.5°C, please always check the product data sheet.

Storage

- Always use and store the thermometer in a vertical position
- Not to be stored horizontally
- Not to be stored upside down
- Not to be banged about, ensure packed correctly when stored and if in transit
- Thermometers should not experience sharp sudden changes in temperature
- Store at room temperature, always bear in mind the range of your thermometer