





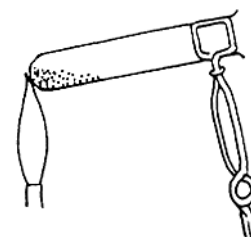
# Heating things

## Using a Bunsen burner

Type of flame	Gas tap	Air hole	Heat of flame	Appearance	Hazards	When used
<b>yellow flame</b>	fully (or partly) open	closed	warm		Coats objects with black soot.	Used when burner is being lit or not heating anything. Easy to see & will not readily set fire to clothing etc.
<b>gentle flame</b> Pale lilac, smaller than medium flame	partly closed	partly closed	very warm		Difficult to see in bright sunlight. Risk of blowing out.	Used when only gentle heat is needed.
<b>medium flame</b> yellow just disappears; pale lilac, almost invisible	fully open	partly closed	quite hot		Difficult to see in bright sunlight. Some risk of blowing out.	Most useful flame for general heating. Not too hot.
<b>roaring flame</b> inner cone blue, outer cone lilac	fully open	fully open	very hot		Difficult to see in bright sunlight. Do NOT partly close gas tap if air hole fully open.	Used when very strong heating is needed (which is not very often).

## Heating solids in test tubes

- Wear eye protection; do not normally fill more than  $\frac{1}{5}$  full.
- If the solid is powdered, shake it so that there is a slope.
- Using a suitable holder, hold the tube just pointing up from the horizontal.
- Hold the tube so that the bottom is just in the tip of the flame.
- Take care that the tube is not pointing directly at anybody.
- Start with a gentle flame; increase to a medium flame and then a roaring flame if necessary.



## Heating liquids in test tubes

- Wear eye protection; use a wide diameter test tube (“boiling tube”).
- Do not normally fill more than  $\frac{1}{10}$  full (it is much less likely to boil over).
- Add an anti-bump granule (“boiling chip”).
- For flammable liquids, use a water bath (see below).
- Using a suitable holder, hold the tube at an angle so that the bottom is just at the tip of the flame and the top is well clear of the flame.
- Start with a gentle flame and increase only if necessary.
- Flick your wrist continuously but gently so that the liquid is shaken.



## Heating flammable liquids

- Wear eye protection; use a wide diameter test tube (“boiling tube”).
- Do not normally fill more than  $\frac{1}{10}$  full (it is much less likely to boil over).
- Add an anti-bump granule (“boiling chip”).
- Do NOT heat directly over a naked flame. Instead, stand the tube in a beaker of water. Hot water may be obtained from a hot tap or an electric kettle (or use an electric water bath). If necessary, the beaker of water may be boiled using a roaring flame; then extinguish flame.

