# Sodium, potassium, magnesium, calcium carbonates

*including* **hydrogencarbonates (bicarbonates)**

| Substance | Hazard | Comment |
|---|---|---|
| **Sodium carbonate**<br>*Hydrated or anhydrous solid*<br>**Washing soda**<br>**Potassium carbonate** |  <br>**IRRITANT** | WARNING: cause serious eye irritation. Anhydrous solid presents a bigger risk because it is finely powdered, whereas the hydrate is crystalline (usually large crystals). Soda ash is an impure (industrial) form. Hydrated sodium carbonate is used as washing soda. They are approved food additives, E500 & E501. |
| **Sodium** & **Potassium carbonate**<br>*Concentrated solution (If 0.8 M or more)* |  <br>**IRRITANT** | WARNING: cause serious eye irritation. |
| **Sodium** & **Potassium carbonate**<br>*Dilute solution (If less than 0.8 M)* | **Currently not classified as hazardous** | They are used as a dilute solution in bath salts. |
| **Sodium** & **Potassium hydrogencarbonate (bicarbonate)**<br>*Solid and solution*<br>Also **Sodium sesquicarbonate** | | They liberate carbon dioxide on gentle heating (or with acids). Sodium hydrogencarbonate is an approved food additive, E500, and is used as baking soda. 'Bicarb' or 'bicarbonate of soda' are old-fashioned names.<br>Bath salts contain sodium sesquicarbonate, (sodium carbonate hydrogencarbonate), $Na_2CO_3.NaHCO_3.H_2O$. |
| **Calcium** & **Magnesium carbonate**<br>**Magnesium carbonate hydroxide** ('light' and 'heavy' magnesium carbonate)<br>*Solid* | | Calcium carbonate occurs naturally as calcite, marble, chalk and limestone. It decomposes if heated above 800 °C and gives carbon dioxide with acids (unless the calcium salt is insoluble in water). It is an approved food additive, E170. Blackboard chalk may be calcium carbonate but is more likely to be calcium sulfate.<br>Magnesium carbonate also occurs naturally. It decomposes more easily than calcium carbonate and is also an approved food additive, E504. |
| **Calcium** & **Magnesium hydrogencarbonate (bicarbonate)**<br>*Solution* | | The solid does not exist. The solution is the cause of temporary hardness of water. On warming, calcium (or magnesium) carbonate is deposited as 'limescale' or 'fur', eg on kettles. The solution reacts with soap to produce insoluble calcium (or magnesium) salts ('scum'). |

## Typical control measures to reduce risk

- Wear eye protection,
- Avoid raising dust.
- Avoid contact with acids, especially in sealed containers, because large volumes of carbon dioxide will be formed.

## Assessing the risks

- What are the details of the activity to be undertaken? What are the hazards?
- What is the chance of something going wrong?
  *eg specks of solid transferred into the eye by rubbing with a contaminated finger.*
- How serious would it be if something did go wrong?
- How can the risk(s) be controlled for this activity?
  *eg can it be done safely? Does the procedure need to be altered? Should goggles or safety spectacles be worn?*

## Emergency action

In all emergency situations, alert the responsible adult immediately. Be aware that actions may include the following:

- In the eye — Irrigate the eye with gently-running tap water for at least 20 minutes. Call 999/111.
- In the mouth/swallowed — Do no more than rinse and spit with drinking water. Do **not** induce vomiting. Call 999/111.
- Spilt on the skin or clothing — Brush solid off contaminated clothing. Irrigate the affected area with gently-running tap water for at least 20 minutes as appropriate. Call 999/111 as appropriate. Rinse clothing.
- Spilt on the floor, bench, etc — Brush up solid spills, trying to avoid raising dust, then wipe with a damp cloth. Wipe up solution spills with a cloth and rinse it well.

 