





Sodium sulfites, thiosulfate & persulfate

including metabisulfite & potassium salts

Substance	Hazard	Comment
Sodium & potassium sulfite [sulfate(IV)]; sodium & potassium metabisulfite [disulfate(IV)] Solid and concentrated solution (<i>If 0.15 M or more</i>)	 HARMFUL CORROS.	DANGER: Harmful if swallowed, cause serious eye damage. With acids, produce sulfur dioxide (SO ₂) (a TOXIC gas, see <i>Sheet 52</i>); do not inhale. Smell of SO ₂ due to acidification by CO ₂ in air. Approved food additives: sodium sulphite E221, potassium sulphite E225, sodium metabisulfite E223, potassium metabisulfite E224 all used as preservatives. For a 15-minute exposure, concentration of metabisulfite in the atmosphere should not exceed 15 mg m ⁻³ .
Sodium & potassium sulfite [sulfate(IV)]; sodium & potassium metabisulfite [disulfate(IV)] Dilute solution (<i>If less than 0.15 M</i>)	LOW HAZARD	They smell of sulfur dioxide due to acidification by carbon dioxide in the air; do not inhale.
Sodium & potassium hydrogensulfite [hydrogensulfate(IV)] Concentrated solution (<i>If 0.15 M or more</i>)	 HARMFUL CORROS.	DANGER: Harmful if swallowed, cause serious eye damage. With acids, produce sulfur dioxide (SO ₂) (a TOXIC gas, see <i>Sheet 52</i>); do not inhale. Smell of SO ₂ due to acidification by CO ₂ in air. Sodium and potassium hydrogensulfites are approved food additives, E222 and E228, as preservatives. The pure solid NaHSO ₃ does not exist. Products sold as bisulfite contain metabisulfite.
Sodium & potassium metabisulfite [disulfate(IV)] Dilute solution (<i>If less than 0.15 M</i>)	LOW HAZARD	Although sodium metabisulfite solid is Na ₂ S ₂ O ₅ , it behaves as sodium hydrogensulfite, NaHSO ₃ , in solution.
Sodium & potassium thiosulfate Solid and solutions	LOW HAZARD	Produce sulfur (see <i>CLEAPSS Student Safety Sheet 82</i>) & sulfur dioxide (TOXIC gas, see <i>Sheet 52</i>) with acids, including carbon dioxide. Carbon dioxide may cause solutions to go cloudy.
Sodium & potassium persulfate [peroxodisulfate(VI)] Solid and most solutions (<i>If 0.04 M or more</i>)	 OXIDISER IRRITANT  HEALTH HAZARD	Danger: oxidisers; skin irritants; cause serious eye irritation; harmful if swallowed; may cause respiratory irritation, allergy or asthma. Na ₂ S ₂ O ₈ is used, for bleaching hair, etching printed-circuit boards and to initiate polymerisation reactions. Solutions are low hazard if less than 0.04M.
Sodium sulfate(VI) and hydrogensulfate(VI)		See <i>CLEAPSS Student Safety Sheet 34</i> .

Typical control measures to reduce risk

- Use the smallest quantity or concentration possible.
- Wear eye protection when handling hazardous solids and solutions.
- Take care not to inhale sulfur dioxide; asthmatics should be especially careful; use a fume cupboard to avoid exposure.

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, accidental inhalation of sulfur dioxide when opening a bottle or dissolving a solid in water.
- **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 the eye** Flood eye with gently-running tap water for 10 minutes. Consult a medic if pain persists.
- **Swallowed** Do no more than wash out the mouth with drinking water. Do **not** induce vomiting. Consult a medic.
- **Spilt on the skin or clothing** Brush solid off contaminated clothing. Rinse skin or clothing as necessary.
- **Spilt on the floor, bench, etc** Brush up solid spills, trying not to raise dust, then wipe with a damp cloth. Wipe up solutions spills and rinse well.