




Ammonium salts

Substance	Hazard	Comment
Ammonium chloride Solid and concentrated solution (If 1.8 M or more)	 HARMFUL	Once called <i>sal ammoniac</i> . It decomposes on heating to form ammonia gas (see <i>Sheet 30</i>) and hydrogen chloride gas (see <i>Sheet 20</i>) but they recombine on cooling. Warming with alkali will generate ammonia gas.
Ammonium chloride Dilute solution (If less than 1.8 M)	LOW HAZARD	Warming with alkali will generate ammonia gas (see <i>Sheet 30</i>).
Ammonium sulfate(VI) Solid	LOW HAZARD	It decomposes on heating to form ammonia gas (see <i>Safety Sheet 30</i>) and sulfuric acid 'gas' (see <i>Sheet 22</i>) but they recombine on cooling. It is an approved food additive, E517. Warming with alkali will generate ammonia gas.
Ammonium carbonate Solid	 HARMFUL	Also known as <i>sal volatile</i> or smelling salts. The solid decomposes, even at room temperature, to ammonia (see <i>Sheet 30</i>) and carbon dioxide (see <i>Sheet 58</i>). It is an approved food additive, E503. Warming with alkali generates ammonia gas.
Ammonium carbonate Solution	LOW HAZARD	Warming with alkali generates ammonia gas (see <i>Sheet 30</i>).
Ammonium nitrate(V) Solid	 OXIDISING	It may decompose explosively if heated; many industrial accidents have occurred in this way. Warming with alkali will generate ammonia gas (see <i>Sheet 30</i>).
Ammonium nitrate(V) Solution	LOW HAZARD	The solution does have oxidising properties. Warming with alkali will generate ammonia gas (see <i>Sheet 30</i>). Heating the solution to dryness produces fumes of nitrogen dioxide.
Ammonium dichromate(VI)	See <i>Student Safety Sheet 47</i> .	

Typical control measures to reduce risk

- Wear eye protection when handling hazardous solids and solutions.
- Do **not** heat solid ammonium nitrate(V) and do **not** heat ammonium nitrate(V) solution to dryness.
- Avoid exposure to hazardous decomposition products if ammonium carbonate, chloride or sulfate(VI) are heated, eg, by using a fume cupboard.
- Avoid exposure to ammonia gas when reacting ammonium salts with alkalis, eg, by using a fume cupboard.

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 eye protection be worn?

Emergency action

- In the eye Flood the eye with gently-running tap water for 10 minutes. See a doctor if pain persists.
- Swallowed Do no more than wash out the mouth with water. Do **not** induce vomiting. Sips of water may help cool the throat and help keep the airway open. See a doctor.
- Spilt on the skin or clothing Brush solid off contaminated clothing. Rinse clothing or the skin as necessary.
- 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.