








Higher alcohols

including Propanol, Butanol, Pentanol

Substance	Hazard	Comment
Propan-1-ol (<i>n</i> -propanol), Propan-2-ol (<i>iso</i> -propanol) <i>Liquids</i>	 FLAMMABLE IRRITANT  CORROSIVE	DANGER: highly flammable liquid & vapour; may cause drowsiness or dizziness; causes serious eye damage (propan-1-ol)/irritation (propan-2-ol). For a 15-minute exposure, the concentration of vapour in the atmosphere should not exceed 625 mg m ⁻³ (propan-1-ol), 1250 mg m ⁻³ (propan-2-ol). The liquid gives off sufficient vapour at 22°C (-1-ol)/12°C (-2-ol) to ignite if a flame or spark is applied. Propan-2-ol is sometimes used as 'rubbing alcohol', especially in the USA. Also used to clean optical surfaces, eg spectacle and camera lenses.
Butan-1-ol (<i>n</i> -butanol), 2-methylpropan-1-ol (<i>iso</i> -butanol), <i>Liquids</i>	 FLAMMABLE IRRITANT  CORROSIVE	DANGER: flammable liquid & vapour; causes skin irritation & serious eye damage; may cause respiratory irritation & drowsiness or dizziness; <i>butan-1-ol</i> is harmful if swallowed. For a 15-minute exposure, the concentration of vapour in the atmosphere should not exceed 154 mg m ⁻³ (butan-1-ol), 231 mg m ⁻³ (2-methylpropan-1-ol). The flash point of butan-1-ol is 37°C (2-methylpropan-1-ol 28°C), ie the liquid gives off sufficient vapour at 37°C/28°C to ignite if a flame or spark is applied.
2-methylpropan-2-ol (<i>tert</i> -butyl alcohol) <i>Liquid but may be solid on cold day</i>	 FLAMMABLE IRRITANT	DANGER: highly flammable liquid & vapour; causes serious eye irritation; harmful if inhaled; may cause respiratory irritation. For a 15-minute exposure, the concentration of vapour in the atmosphere should not exceed 462 mg m ⁻³ . Liquid gives off sufficient vapour at 11°C to ignite if a flame or spark is applied.
Butan-2-ol (<i>sec</i> -butyl alcohol) <i>Liquid</i>	 FLAMMABLE IRRITANT	WARNING: flammable liquid & vapour; causes serious eye irritation; may cause respiratory irritation & drowsiness or dizziness. For a 15-minute exposure, the concentration of vapour in the atmosphere should not exceed 462 mg m ⁻³ . The flash point of is 24°C, ie the liquid gives off sufficient vapour at 24°C to ignite if a flame or spark is applied.
Pentan-1-ol (<i>n</i> -amyl alcohol), 3-methylbutan-1-ol (<i>iso</i> -amyl alcohol) <i>Liqs</i>	 FLAMM. HARMFUL	WARNING: flammable liquid & vapour; may cause skin, respiratory & serious eye irritation; may be harmful if swallowed. For a 15-minute exposure, the concentration of 3-methylbutan-1-ol in the atmosphere should not exceed 458 mg m ⁻³ .

Typical control measures to reduce risk

- Wear eye protection.
- Make sure the room is well ventilated or, in a laboratory, use a fume cupboard if possible.
- Check availability of ways of putting out any fires.
- **Do not use near naked flames; if heating necessary, use an electrically-heated water bath or hot water from kettle.**

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, does alcohol need to be heated? Could there be high levels of vapour?
- **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 the eye with gently-running tap water for 10 minutes. Consult a medic.
- **Vapour breathed in** Remove the casualty to fresh air. Keep him/her warm. Consult a medic if breathing is difficult.
- **Swallowed** Do no more than wash out the mouth with water. Do **not** induce vomiting. Consult a medic.
- **Clothing catches fire** Smother flames on clothing or the skin with a fire blanket or other material. Cool any burnt skin with gently-running tap water for 10 minutes.
- **Other fires** Allow fires in sinks, etc to burn out. Fires at the top of test tubes, beakers, etc should be smothered with a damp cloth or heat-resistant mat.
- **Spilt on the skin or clothing** Remove contaminated clothing. If more than a test-tube amount was involved, wash the affected area and clothing with plenty of water.
- **Spilt on the floor, bench, etc** Put out Bunsen flames. Wipe up small amounts with cloth and rinse it well. For larger amounts, open windows, cover with mineral absorbent (eg, cat litter), scoop into a bucket and add water.