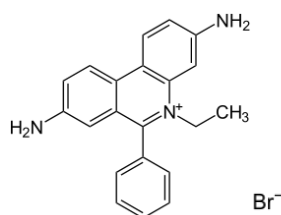


Information Sheet



Working safely with ethidium bromide (EtBr)

Many laboratories of ETH Zurich work with ethidium bromide (EtBr). This red phenanthridine dye is commonly used in molecular and cell biology (gel electrophoresis) to detect nucleic acids, DNA and RNA.



EtBr is available as a pure crystalline solid, in tablet form or as aqueous stock solution.

Tab. 1: Hazard statements and warning labels for pure EtBr

GHS		
	H302	Harmful if swallowed
	H330	Fatal if inhaled
	H341	Suspected of causing genetic defects
 Danger!	P202	Do not handle until all safety precautions have been read and understood.
	P281	Use personal protective equipment as required.
	P302 + P352	IF ON SKIN: wash with soap and water.
	P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
	P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do - continue rinsing.
	P309 + P311	If exposed or if you feel unwell: Call a POISON CENTER or doctor.
	P405	Store locked up

What are the health risks of EtBr?

- Highly mutagenic substance
- Possibly cancerogenic or teratogenic
- Very toxic if inhaled, especially in crystalline form
- Readily absorbed through the skin

Always exercise extreme caution when handling EtBr!
Before using, you must have read and understood all safety precautions!

HOW CAN I PROTECT MYSELF?

Substitution

- If possible, substitute EtBr with another, less toxic substance.
- **Warning:** many substitute dyes are not good alternatives because they must be dissolved in DMSO and are then able to easily penetrate the skin barrier.

Technical and organizational measures

- Observe the instructions on the product safety datasheet.
- Minimize amounts of EtBr used – only prepare as much solution as is really needed.
- Do not store EtBr solutions in plastic containers over longer periods of time.
- Avoid handling EtBr in crystalline form! Instead use tablets or stock solutions.
- All work steps in which EtBr dust or aerosols can form must be performed in a chemical fume hood (use a dust mask + suitable protective gloves).
- Transporting EtBr solutions in the lab: only small quantities, always in non-breakable receptacles.
- Designate special EtBr workstations and mark accordingly.
- After work is completed, clean EtBr workstations immediately and thoroughly.

Personal protective measures

- When handling EtBr (also solutions) always wear complete and suitable **personal protective equipment:**
 - Safety glasses / face protection
 - Lab coat
 - Gloves (nitrile; NO Latex! If possible, wear 2 pairs of gloves over each other)
 - Dust mask (when there is the possibility of dust or aerosols forming)
- After working with EtBr, immediately remove gloves and wash hands thoroughly.

DISPOSAL

- **Never** pour solutions containing EtBr down the drain or put contaminated material in the trash!
- All EtBr-containing waste (e.g. gels, contaminated material) must be brought to an ETH hazardous waste disposal station. There, you can also obtain suitable receptacles for collecting hazardous waste.
- EtBr-containing waste must be clearly labeled as such.
- EtBr-containing gels that contain radio-isotopes must be collected separately and treated as radioactive waste.
- **Deactivation of EtBr solutions:** EtBr can be adsorbed on activated charcoal (ca. 100 mg activated charcoal for 50 mg EtBr, stir at least 12h). After filtering it out, the EtBr-free aqueous filtrate (check!) can be poured down the drain, provided that there are no other hazardous substances in the solution. The activated charcoal must subsequently be disposed of as hazardous waste containing EtBr. As an alternative, commercially available adsorbers may be used.

IN CASE OF EMERGENCY

Spills:

- Small quantities can be cleaned up by the lab users themselves. Large quantities or extensive spills: Alert **Emergency Desk: 888**. Lock the room.
- Always wear a complete set of suitable **personal protective equipment**.
- Wipe up (paper towels) or absorb spill (e.g. chemical binders) and wash the contaminated surface thoroughly with soap and water.
- Do not generate dust when wiping.
- Dispose of used cleaning materials as EtBr-containing hazardous waste.
- Check success of decontamination with the aid of an UV lamp.

First aid in the event of personnel contamination

After eye contact:

- **Emergency telephone: 888** (Emergency Desk). Report the accident and request assistance of university paramedics.
- Rinse with water (at least 10 minutes).
- Subsequent consultation of an eye hospital is mandatory!

After skin contact:

- Wash with plenty of water (at least 10 minutes).
- Remove contaminated clothing.
- If a large area is affected or skin irritation persists: consult a physician and show container or label.

After inhalation:

- **Emergency telephone: 888** (Emergency Desk). Report the accident and request university paramedics. If necessary, contact ambulance service (**0-144**).
- Fresh air
- Seek medical attention / hospital immediately and show container or label.

After ingestion:

- **Emergency telephone: 888** (Emergency Desk). Report the accident and request university paramedics. If necessary, contact ambulance service (**0-144**).
- Rinse mouth immediately and drink a glass of water (get casualty to drink). Do not induce vomiting.
- Seek medical attention / hospital immediately and show container or label.

Poison Control (Information): Telephone: 0-145

Consultation of the poison control must not delay first aid and alerting 0-144!

ETH Zürich
Safety, Security, Health and Environment (SSHE)
Section CABS

Phone: +41 44 632 30 30
cabs@ethz.ch
www.sicherheit.ethz.ch →
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