

Information Sheet

Working with Acrylamide

Acrylamide is not only an undesired by-product created by intensely heating potato or grain-based foods, but is used in many biochemical and biological laboratories of ETH, specifically to manufacture gels for electrophoresis (“Polyacrylamide Gel Electrophoresis (PAGE)”).

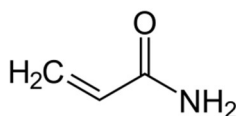




Fig. 1: Structural formula for Acrylamid

Tab 1: Labeling, hazard statements and precautionary statements for unpolymerized acrylamide

Labeling according to GHS (new system)		
  Danger!	H350	May cause cancer
	H340	May cause genetic defects
	H361f	Suspected of damaging fertility
	H301	Toxic if swallowed
	H372	Causes damage to organs through prolonged or repeated exposure
	H332	Harmful if inhaled
	H312	Harmful in contact with skin
	H319	Causes serious eye irritation
	H315	Causes skin irritation
	H317	May cause an allergic skin reaction
	P201	Obtain special instructions prior to use
	P280	Wear protective gloves/protective clothing/eye protection/face protection
	P301+310	If swallowed: Immediately call a poison center or doctor
	P305+351+338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do - continue rinsing
	P308+313	If exposed or concerned: Get medical advice/attention

What are the health risks of acrylamide?

- Unpolymerized acrylamide is considered a **CMR substance** (carcinogenic, mutagenic, toxic for reproduction). It is classified as follows:
 - C2: includes substances that should be considered **carcinogenic for humans**. There is sufficient evidence to presume that human exposure to the substance can cause cancer.
 - M 2: includes substances that should be considered **mutagenic for humans**. There is sufficient evidence to provide a strong presumption that human exposure to the substance may result in heritable damage.
 - R_F 3: includes substances which because of **possible impairment of reproductivity** (fertility) in humans give cause for concern.
- Measurements at the Universities of Heidelberg and Freiburg i.Br. have shown that when producing acrylamide gels (even in labs with 8 air changes per hour), the ambient air exhibits a significant contamination.

Extreme caution is called for when handling unpolymerized acrylamide!
Minimization requirement, i.e. avoid exposure!
Before using, you must have read and understood all safety precautions!

How can I protect myself?

Substitution:

- Switch to ready-made acrylamide gels (if possible, with a residual amount of monomers < 0.1%)
- Pregnant and breastfeeding employees may not work with unpolymerized acrylamide.

Technical and organizational measures:

- General: unpolymerized acrylamide should only be handled in the fume hood
- Cast acrylamide gels only in the fume hood; fully polymerized gels may be used outside the fume hood (provided that no other hazardous substances are used)
- Clearly distinguish fume hoods in which unpolymerized acrylamide is worked with
- Store unpolymerized acrylamide in ventilated cabinets only

Personal protective measures:

- When using unpolymerized acrylamide, always wear gloves, lab coat and safety glasses
- If there is a risk of creating dust when handling, also wear a dust mask

Sources:

- University of Heidelberg, Safety Department
- University of Freiburg i. Br., Safety Office

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