



Enzymes

includes amylase, catalase, cellulase, diastase, lipase, proteases (eg, pepsin, trypsin), urease

Substance	Hazard	Comment
Enzymes <i>Powders</i> 'Biological' detergents contain enzymes.	 CORROSIVE HEALTH IRRITANT HAZARD	DANGER: Most enzymes are sensitisers (see below) and may cause allergy or asthma symptoms, or breathing difficulties if inhaled. DANGER: Some enzymes can cause serious eye damage. WARNING: Many enzymes irritate the eyes, skin and respiratory system.
Enzymes <i>Concentrated solutions</i>	 CORROSIVE HEALTH IRRITANT HAZARD	DANGER: Most enzymes are sensitisers (see below) and may cause allergy or asthma symptoms, or breathing difficulties if inhaled. DANGER: Some enzymes can cause serious eye damage. WARNING: Many enzymes irritate the eyes, skin and respiratory system.
Enzymes <i>Dilute solutions</i> (less than 1% w/w) or 5% <i>Lipase</i>	LOW HAZARD	Most at these concentrations are unlikely to offer any significant risk. Biological systems are rich sources of enzymes, eg, liver (catalase), saliva (amylase).

Note: Some people are **allergic** to particular substances; their bodies' immune system reacts to these substances to an unusual extent. **Asthma** is one type of allergy which results in breathing difficulties. A **sensitiser** is a substance that may produce only a small or even no allergic reaction when humans are first exposed to it (sometimes over an extended period of time) but can produce a much more severe reaction on subsequent occasions, even when the body is exposed to much smaller amounts.

Typical control measures to reduce risk

- Use the lowest concentration/smallest amount possible.
- Wear eye protection for enzyme at 1% or higher concentration
- Avoid powdered enzymes escaping into the air; use a fume cupboard (not switched on) when handling enzyme powders.
- Do not spray enzyme solutions.

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, could enzyme dust be breathed in?
- **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?

Emergency action

- **In the eye** Flood the eye with gently-running tap water for 10 minutes. Consult a medic if powder involved.
- **Swallowed** Wash out the mouth with drinking water. Do **not** induce vomiting. Consult a medic.
- **Dust breathed in** Remove the casualty to fresh air. Consult a medic if breathing is difficult
- **Spilt on the skin or clothing** Remove contaminated clothing. Wash off the skin with soap and plenty of water. Rinse contaminated clothing.
- **Spilt on the floor, bench, etc** Scoop up powders (take care not to raise dust). Wipe up solution spills or any traces of powders with a damp cloth.