

Hazards and Safe Use of Multi-component Chemical Products in Construction



Introduction

Chemicals can present serious hazards to worker health and safety. Multi-component chemicals present additional hazards. The MSDS provides information that the manufacturer is required to disclose in order to handle the product safely. This includes safe storage, transport and disposal. All MSDS should include a description of the chemicals that are in a product and what steps to take to protect yourself when using the product. A MSDS is required for each component of a multi-component product. Manufacturers or importers of chemicals are required to assess the hazards of these chemicals. This includes hazards that are known to be present in the workplace and that employees may be exposed to under normal conditions of use or in a foreseeable emergency. ***Additional hazards may be created when the individual chemicals of a multi-component products are mixed together that may not be addressed on the MSDS of the individual components.*** The product created by the mixing of multi-component chemicals may require different personal protective equipment, engineering controls, handling procedures, emergency procedures, and disposal requirements.

Prior to the use or mixing of multi-component chemical products, employees should be properly trained on the hazards and safe use of these products.

Material Identification

Multi-component materials are often identified on the MSDS by having a part A, B, C, etc. after the product name. Multi-component material types include **epoxies, polyurethanes, polyureas, polyisocyanates, polyaspartics**, as well as others.

While all potential hazards should be listed on the individual MSDSs if the components are sold to be mixed together (since mixing would be under normal conditions of use), that may not always be the case.

Health Hazards

In addition to the health hazards listed on each of the individual components, there may be health hazards that are created by the mixture that are not listed on the MSDS. The manufacturer should be consulted about these additional hazards. The mixture of the individual components of some multi-component products can produce exothermic reactions (high heat) or produce dangerous respiratory hazards and require additional measures to protect workers, such as engineering controls and personal protective equipment.

The most common health hazards created by the mixture of multi-component products include:

- Flammability and/or combustibility - products can auto-ignite
- Extreme heat - causing burns to skin, eyes, mouth and lungs
- Inhalation hazard - fumes may require respiratory protection
- Allergic reactions/occupational asthma - most common with latex, formaldehydes, isocyanates.

First Aid

First aid treatment for exposure to mixed multi-component products may be different than for the unmixed components. It is important that medical personnel have information about these products

prior to treatment. First aid information for a mixed multi-component product may not be clearly stated on the MSDS. Emergency contact information should be on the MSDS.

Explosion and Fire Information

Extra care should be taken when using multi-component products, especially in confined spaces or areas of poor ventilation. Some of these mixtures are more flammable and/or explosive when combined than they are prior to mixing. Ambient conditions may affect and/or accelerate reactions of multi-component chemicals. Special equipment and control measures may be required in order to maintain a safe work environment. The manufacturer should be consulted to determine the proper equipment. Always have the appropriate fire extinguisher(s) ready at the work location. Have MSDS and emergency contact information available. An emergency action plan is recommended when using products that can generate heat or explosion hazards.

Personal Protective Equipment

The personal protective equipment for multi-component products must address the additional risks posed by the products once they are combined. This may include heat and chemical resistant gloves, goggles and face shield, additional or alternate respiratory protection and body covering clothing. In addition to complying with recommendations of the MSDS for the individual components, the product manufacturer should be consulted about the proper PPE required for safe handling of the mixed and unmixed products.

Disposal Information

Disposal requirements for properly blended multi-component products are often different from that of their individual single components. Many of these multi-component liquids are hazardous waste as liquids, but may be disposed of as non-hazardous waste when solid. Disposal of waste products are regulated by federal, state and local authorities.

OSHA Standards

The following are some of the OSHA standards that may apply when using multi-component products

- Confined Space 29 CFR 1926.21(b)(6)
- Fire Extinguishers 29 CFR 1926.150
- First Aid 29 CFR 1926.50
- Hazard Communication 29 CFR 1926.59 (refers to 29 CFR 1910.1200)
- Personal Protective Equipment 29 CFR 1926.28, 29 CFR 1926.95-107

Additional Information:

- Evacuations Plans and Procedures: Portable Fire Extinguishers: OSHA eTool: <http://www.osha.gov/SLTC/etools/evacuation/portable.html>
- Hazard Communication: OSHA Safety and Health Topics Page: <http://www.osha.gov/dsg/hazcom/index.html>
- Medical and First Aid: OSHA Safety and Health Topics Page: <http://www.osha.gov/SLTC/medicalfirstaid/index.html>
- Occupational Asthma. OSHA Safety and Health Topics Page: <http://www.osha.gov/SLTC/occupationalasthma/index.html>
- Personal Protective Equipment: OSHA Safety and Health Topics Page: <http://www.osha.gov/SLTC/personalprotectiveequipment/index.html>