



SAFETY & HANDLING

Safety and Handling Practices for Resin Solutions Metallic Coagents

It is important to understand the potential health and safety hazards associated with functional metallic coagents to ensure that they are used safely in the work place. The following information discusses the potential hazards associated with metallic coagents, as well as safe use and handling practices which Resin Solutions employs during the manufacture of these materials. It is important that this information be used in conjunction with the Material Safety Data Sheet (MSDS) for the product(s) with which you will be working.

Skin Contact

Animal data suggests that metallic coagents are slightly irritating to the skin. Resin Solutions manufacturing experience has also shown that metallic coagents can cause skin irritation at the site of contact, particularly if skin contact is prolonged. An irritation response can include localized redness, dryness, tenderness and peeling or flaking of the skin – this irritation response is commonly referred to as dermatitis. Some functional acrylics have been shown to be skin sensitizers (substances which cause an allergic skin reaction in susceptible individuals after repeated exposure) in animal test models. Cases of skin sensitization have also been reported for a limited number of functional acrylics. Although we are not aware of any specific information concerning the skin sensitization potential of metallic coagents, skin contact with these products should be prevented to ensure that skin sensitization does not occur.

Extensive protective and hygienic measures are required to prevent skin contact with coagents in order to reduce the potential for contact dermatitis. Gloves must be worn when handling these materials.

Nitrile and butyl rubber have been shown to provide protection against some acrylic monomers in glove breakthrough studies.^{1, 2} In addition, although no formal studies are available, Resin Solutions employees have had success wearing Playtex neoprene gloves when handling metallic coagents. You must also consider the compatibility with formulation solvents and additives when selecting gloves. Cotton lined gloves help to reduce perspiration, which has shown to increase the potential for dermatitis. In addition to gloves, work uniforms and other protective clothing should be used to cover exposed skin surfaces on the arms, legs and torso when there is potential for skin contact with coagents. Contaminated clothing can create a dermatitis problem. Therefore, all Resin Solutions employees are provided with clean work clothes at the start of each work shift. In addition, we use a laundry service which eliminates the possibility of workers removing contaminated clothing from the work place.

Our employees wear chemically resistant safety shoes. Suede, canvas, and soft leather shoes are not recommended. If needed, impervious rubber overboots can be used to help keep safety shoes clean.

There are several skin care products on the market that are designed to effectively remove industrial chemicals and protect the skin. There are also products designed to control perspiration that are used under protective clothing. These perspiration control emulsions are especially effective during the summer months when chemical dermatitis can become more prevalent due to the high humidity. Do not use barrier creams in place of the appropriate personal protective equipment — these creams should be used only in conjunction with protective clothing.

If skin contact with metallic coagent products occurs, wash affected skin surfaces thoroughly with mild soap and lukewarm water. Flush skin thoroughly with lukewarm water to ensure material is completely removed. Remove contaminated clothing and replace with clean clothing.

Housekeeping is a very important aspect of eliminating dermatitis. When housekeeping practices are poor, dermatitis cases usually increase. In many instances a person is not aware that they have had skin contact with a coagent because irritation may not be immediate. By the time the skin reacts, the damage has started. By improving housekeeping practices, "unknown" causes of dermatitis can be minimized.

Inhalation

Metallic coagents can irritate the mucous membrane lining of the upper respiratory tract if inhaled. Symptoms of irritation may include sneezing, coughing, and a burning sensation in the nose and throat. In addition, these products have an acrid odor. Work practices which reduce dust generation during handling, local exhaust ventilation, and respiratory protection are all important to prevent inhalation exposure to these products. In situations where exposure to dust from metallic coagents may occur, protective dust masks or air-purifying respirators with dust/mist protection can be used. However, respiratory protection requirements for your work place should be evaluated by your company's health and safety professionals. In cases where metallic coagents are thermally processed, air purifying respirators with organic vapor cartridges may be appropriate.

Eye Contact

Metallic coagents may cause severe eye irritation and, based on acute animal eye irritation tests, may be corrosive to the eye. Therefore, eye protection should be worn at all times when there is potential for eye contact with dust or vapor from these materials. We recommend chemical-resistant goggles to protect against dust or other particulates that may be generated during handling. However, care must be taken to keep goggles clean. Goggles can present a potential

dermatitis problem if they become contaminated with metallic coagents, which can result in skin irritation, particularly along the seal of the goggles. Do not wear contact lenses.

If eye contact with metallic coagents occurs, rinse eyes thoroughly with clean, lukewarm water at low pressure for at least 15-20 minutes. A doctor or ophthalmologist should be contacted for further evaluation.

Personal Hygiene

Resin Solutions recommends that all of our employees shower at the end of each work shift. When completing certain tasks involving the potential for increased exposure, a shower and a change of clothing are required. It is important that contaminated skin surfaces are washed promptly and thoroughly to remove coagent material.

Dust Explosion Hazards and Precautions

Similar to many organic powders, dust from metallic coagents can present a potential fire and explosion hazard if a sufficient concentration of material becomes airborne in the presence of an ignition source. Minimize the potential for dust explosion by eliminating and controlling ignition sources (bond and ground) and by using good housekeeping practices during storage, transfer and handling.

1. Renard, E.P. et al. "Permeation of Multifunctional Acrylates Through Selected Protective Glove Materials," in American Industrial Hygiene Association Journal. 53, 2. (American Industrial Hygiene Association, February, 1992) pp. 117-123.
2. Zwanenburg, Rob. "Adequate Protective Gloves for Working with UV/EB-Curing Acrylates" (November 26, 1999 RadTech Europe Publication)

About Resin Solutions

Resin Solutions is the premier global supplier of specialty chemical additives, hydrocarbon specialty chemical, and liquid and powder tackifying resins used as ingredients in adhesives, rubbers, polymers, coatings and other materials. Resin Solutions has pioneered the development of these advanced technologies, introducing products that enhance the performance of products in energy, printing, packaging, construction, tire manufacture, electronics, and other demanding applications.

For more information, please visit **www.resinsolutions.com**.

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