



FROM NASA TO YOUR NEIGHBORHOOD,  
GACO COATINGS HAVE YOU COVERED.



## SAFETY AND STORAGE FOR COATINGS

(October 2011, Supersedes 9/06)

These instructions cover safety and storage of Gaco Western elastomeric construction coatings. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN BODILY INJURY OR PROPERTY DAMAGE. Gaco Western produces three basic types of coatings. These are solvent solution, 100% solids, and water-borne coatings. Each type has specific hazard potentials and storage requirements. Solvent solution coatings have hazards associated with fire, solvent toxicity, and chemical toxicity. One-hundred-percent solids coatings have low fire risk but may require special care due to chemical toxicity. Water borne coatings have negligible risk of fire and moderate to very low chemical toxicity. Both the employer and worker must know precautions necessary to protect against fire, explosive combustion and toxicity. Refer to individual product labels, product data sheets, Material Safety Data Sheets and application specifications for product specific information.

An important safety precaution against fire, explosion and chemical toxicity is to provide ventilation at all times. Most coating applications are in exterior areas where natural ventilation minimizes hazards. Where natural air movement is insufficient, such as in a confined area, forced air ventilation is required. Confined areas are best ventilated by equipment that exhausts the air from near floor level, since solvent vapors are heavier than air and tend to collect in low areas. A competent, properly equipped person must be stationed outside confined areas while work is in progress to assist in case of emergency.

### 1. FIRE AND EXPLOSION PREVENTION

- a. Flash points are listed for each Gaco Western product containing solvent on the appropriate product data sheet. The worker and supervisor must know the flash point for material being applied. The flash point is the lowest temperature at which a coating gives off sufficient solvent vapor to form an ignitable mixture with air. This mixture of solvent vapor and air can then be ignited by an outside source such as sparks, flame, lit cigarettes, etc.

When combustible vapor is mixed with air in certain proportions, ignition will produce an explosion. The lowest percentage at which this occurs is called the lower explosive limit. Explosive limits are expressed in percent by volume of vapor in air, generally a minimum of about one percent (10,000 PPM).

Fire and explosion hazards are reduced to minimum when solvent vapors are controlled per Section 2. When work must be done in confined areas, solvent vapor concentrations should be routinely checked with an approved combustible gas meter\*. Should vapor concentrations approach the lower limit, increase air ventilation or stop coating application until the vapor concentration is reduced to a safe level. Do not operate in confined areas, even with ventilation and respirators, when concentrations of solvent vapors are above the lower explosive limit.

- b. Open flame, welding, smoking or other ignition sources shall not be allowed in a building, overhead, or near a building where coating is being or has been recently applied. Open flame, welding, smoking, etc., shall be restricted downwind of, and at least 50 feet (16 meters) from, a coating operation. No smoking, welding or open flame shall be allowed near outlets where solvent vapor laden air is being discharged.
- c. All electrical equipment, outlets, switches, connectors, lights and motors must be grounded. Lights must have a protective enclosure to prevent physical damage.

Whenever solvent vapors are present, all electrical equipment must be explosion proof, complying with Class I, Group D of the National Electrical Code. It is the responsibility of the workers and their supervisor to verify who is to check these precautions. An applicator employee MUST be appointed this duty.

- d. Any equipment, such as spray guns and compressed air nozzles, which can produce a static charge, must be grounded.

- e. Work clothes must be of a material such as cotton that does not generate static charges. Beware of synthetic materials. Shoes shall not have metal sole plates since these cause sparking.
- f. All hand tools used in solvent vapor areas must be of non-sparking construction. When non-complying tools must be used, remove equipment to an area free of solvent vapor or exhaust solvent laden air thoroughly before beginning work.
- g. Have fire extinguishers as prescribed by OSHA within easy access of work areas where solvated coatings are being applied. Dry chemical and CO<sub>2</sub> (carbon dioxide) extinguishers are effective in controlling small solvent fires.
- h. Ventilation shall be provided to coated areas not only during application but also for sufficient time after to assure complete evaporation of solvents.
- i. One person must be assigned at all times the clear responsibility to look for and turn off any equipment that could cause ignition of solvent vapors. This includes pilot lights, switches, electric spark starters, and motors. Workers must lock switches to prevent accidental operation when solvent vapors are present.
- j. Mixing of materials must be done only out of doors with good ventilation. The only exception to this rule is during cold weather (below 40°F (5°C) when materials can be mixed in a warmer controlled area but good ventilation is essential. All precautions for working in confined areas as stated in preceding paragraphs must be followed.

## 2. TOXICITY AND HEALTH CONSIDERATIONS

- a. Inhalation of solvent vapors in high concentration— above 200 parts per million (ppm) — can induce narcosis, a physiological effect similar to intoxication by alcohol. Continued exposure to high concentration can cause loss of consciousness and ultimately even death. The maximum allowable concentration of Gaco Western type solvent vapors on a weighted eight-hour working day is limited to 100 ppm as published by the Occupational Safety & Health Administration (OSHA). This is a concentration at which nearly all workers can be repeatedly exposed without adverse effects. The 100-ppm limit for inhalation is considerably less than the lower explosive limit of about 10,000 ppm.
- b. Perchloroethylene is a chlorinated solvent used in some of Gaco Western's specialty coatings. Perchloroethylene is a potential human carcinogen and has a weighted eight-hour working day exposure limit of 25 ppm. If atmospheric levels cannot be maintained below this exposure level, then an approved air-purifying or positive pressure supplied-air respirator should be used.
- c. Isocyanate vapors are much more toxic than solvent vapors and are limited to 0.005 ppm for TDI (Toluene Diisocyanate) and to 0.02 ppm for most other isocyanate. These limits are likely to be exceeded when any two-component coating or urethane foam is spray applied or the isocyanate portion of the coating is heated. Wear protective clothing impervious to isocyanate and a positive pressure supplied air respirator any time an isocyanate containing product is sprayed, heated or applied in an enclosed area with poor ventilation.
- d. Small, portable air sampling equipment\* is available to measure the content of some solvents and isocyanate in the air. Workers and supervisors must be certain that measurements of this type are being made when individuals are working in an enclosed area.
- e. Approved air-purifying respirators with paint prefilters and organic vapor cartridges may be used to protect against low concentrations of solvent vapor (below 500 ppm). At higher vapor concentrations, this type of mask will not provide adequate protection. Cartridges must be replaced on a regular basis to remain effective.
- f. An approved<sup>+</sup> positive pressure supplied air respirator with an approved<sup>++</sup> source of respirable air must be used for protection when solvent vapor concentrations are high (above 500 PPM)(See also 2b). The use of fresh air supplied respirator does not reduce the necessity for good ventilation to lessen fire hazards and insure proper drying of coatings.
- g. Any time a worker begins to feel discomfort or irritation to the eyes, nose or throat the concentration of solvent or isocyanate vapor is too high for steady exposure. If a person feels light headed, giddy, dizzy or exhilarated the solvent

vapor concentration is also too high and must be reduced by better ventilation. Any person so affected must go to an area of fresh air. If ventilation cannot lower concentrations to below exposure limits (see 2a, 2b & 2c) then appropriate respiratory protection must be used.

- h. The effectiveness of ventilation depends on the physical barriers that restrict airflow. Open exterior areas on roofs or decks ventilate normally by natural air movement. Confined areas in rooms, tanks and some pit or pond areas, as well as roofs or decks surrounded by walls or high parapets require forced air ventilation.
- i. Most people do not find solvent vapors irritating to the skin, even in high concentrations. Contact with liquid solvent has a drying effect on the skin and should be avoided by wearing impermeable gloves. Repeated exposure to solvents can cause drying, cracking, irritation and inflammation of the skin. Special hand creams can be used to protect persons who handle Gaco Western solvents or coatings frequently. Protect the sensitive areas of the face, armpits and groin from contact with solvent. These areas can suffer an astringent burn and should be washed with soap and water immediately if exposed to liquid solvents.
- j. Some individuals have very low resistance to irritants. Should a person develop respiratory problems or skin rash, have them consult a physician. Particularly sensitive individuals may have to be assigned to work areas that are free of exposure to solvents and isocyanate, or in some cases, certain chemicals.
- k. Should solvent, solvated coatings or urethane materials be splashed in the eye, flush immediately with water; then consult a physician.
- l. When hazardous coatings such as Gaco Western's waterborne acrylics are applied by spray, a particulate matter facemask must be worn to prevent inhalation of overspray.

### 3. OTHER HEALTH CONSIDERATIONS

- a. Footwear must be a safety shoe with steel toe protection. 55-gallon (208.2 L) drums of coating are very heavy and can cause considerable damage if set or dropped on an unprotected foot. The sole should be of a soft, resilient material to give best traction without damaging coated areas.
- b. Use extreme caution when working on sloped areas. Use lifelines. Wet coatings are very slippery.
- c. When working in bright sun with light color coating, wear dark glasses to prevent glare blindness.

### 4. PROPERTY PRECAUTIONS

Consider possible damage to property. Overspray can ruin finishes on autos and other surfaces (brick, paint, plastic, etc.). Solvent vapors in confined areas can damage plants and pets -- including tropical fish and birds. Foods -- even those stored in freezers -- can pick up a solvent taste and should be protected from vapors.

### 5. STORAGE

- a. All material should be stored in a cool shaded place, preferably at a temperature less than 75°F (24°C). Higher storage temperature for extended periods can cause thickening and even gelation of elastomeric coatings.
- b. Whenever work is stopped for the day, all coatings and thinners should be stored in tightly sealed factory containers to prevent evaporation and fire hazard. Materials left on unsupervised job sites may attract the curious or the malicious. Protect your materials properly and avoid potential harm to others.
- c. Do not keep open containers in confined places.
- d. Protect emulsion coatings (water borne) from freezing.