Since 1955

GACO WESTERN

General Instruction:

GW-3-1
July 2000
Supersedes 11/98

(Formerly GW-1, Section 1A)

SAFETY & STORAGE FOR FOAM AND COATINGS

COATINGS:

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, Inc 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_2 (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[+] positive pressure supplied air respirator with an approved[++] 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.

FOAM:

These instructions cover safety and storage of Gaco Western PolyFoam and Polyiso foam systems. All personnel handling liquid polyurethane or polyisocyanurate foam components should familiarize themselves with the dangers and health hazards associated with these chemicals. Work crews should undergo a complete physical examination prior to working with isocyanate,

polyurethane, or polyisocyanurate components, followed with periodic checkups if they continue working with such products. Employees with the following conditions should not work with these materials:

- Chronic respiratory diseases.
- Asthma
- History or presence of allergic disease.
- Skin allergies, eczema.

1. SAFETY EQUIPMENT AND VENTILATION

a. Protective Equipment
1. Positive pressure air-supplied respirator with full-face mask or hood. Air must be oil-free.
2. Fabric coveralls
3. Protective footwear or boots.
4. Impervious gloves**.**

b. Indoor Spraying Precautions
1. Isolate the environment of the area to be sprayed from the rest of the structure.
2. Spray only in well-ventilated areas. During spray operations, adequate flow of fresh air into the spray area must be maintained. Air from the spray area must be exhausted to the outdoors in a manner that prevents return into the interior of the structure through windows, doors, intake vents or conduits.
3. Short-term visitors to the spray area must wear goggles and dust/organic vapor cartridge type respirators, which constitute minimum protective apparatus. Cartridge type respirators are effective for only a short term, low level exposure and are not approved for use with diisocyanates.
4. Keep spectators away from the spray area.
5. Smoking in the same area during spray operations shall be strictly prohibited

c. Outdoor Spraying Precautions
1. Rope off the area within 150 feet (46 meters) of the spray site.
2. Seal off all ventilation intakes within the affected area.
Erect windbreaks, when necessary, to confine the spray-mist to avoid damage to any surface near the work zone due to overspray or drift.
4. Keep spectators away from the spray area.

2. TOXICITY AND HEALTH CONSIDERATIONS

a. Skin Exposure:
Contact with liquid isocyanate can cause reddening, swelling, and/or blistering of the exposed area if it is not removed promptly. If a person is subjected to a major splash or another type of massive exposure to liquid isocyanate (Component A), drench them immediately with water using a safety shower or hose-spray. All contaminated clothing, including shoes, should be removed and the isocyanate wiped from the skin with a clean, soft cloth. The affected area should then be cleansed with repeated soap and water washing and rinsing. If a rash or irritation develops, a physician should be consulted. Decontaminate clothing prior to reuse by soaking the garments in an 8% ammonia solution for one hour prior to laundering with hot water and detergent. Destroy all contaminated leather items including shoes, belts, watchbands, etc.

b. Eye Contact**:**
Eyes should be immediately flushed with copious quantities of clean water for at least 15 minutes. Obtain medical attention immediately.

c. Inhalation**:**
Adequate safety precautions must be followed even though respiratory discomfort may not be immediately apparent when using isocyanate (Component A). Inhalation of isocyanate vapors or mist can produce severe irritation. Excessive exposure will produce serious, possible irreversible pulmonary injury. Persons exhibiting symptoms of isocyanate exposure (severe coughing, tightness of chest, labored breathing) should be immediately removed from the contaminated area. If breathing has stopped, artificial respiration must be promptly applied. If breathing is labored and oxygen inhalation equipment is available, oxygen should be administered by trained personnel. Obtain medical attention immediately.

3. STORAGE

a. Component A should be kept away from caustic solutions, tertiary amines, and water, to prevent rapid polymerization and accompanying generation of heat and gasses. Dangerous pressures can develop in closed containers.

b. Protect all materials from moisture. Both components may contain volatile ingredients; therefore, keep the containers tightly sealed and store indoors between 64 ° – 86 °F (18°–30 °C). DO NOT STORE THE MATERIALS IN THE DIRECT SUNLIGHT. Open the containers carefully, allowing any built-up pressure to be relieved slowly and safely.

4. FIRE AND EXPLOSION PREVENTION

a. Nonflammable cleaning solvents should be used for cleanup. Solvent manufacturer's precautions must be observed. A sprinkler system, water spray, carbon dioxide or dry chemical extinguisher may be used for extinguishing fires involving liquid components. Fire fighters should wear self-contained breathing apparatus.

b. ***CAUTION***: Exposed foam insulation in an interior area presents an unreasonable fire risk. In no instance should polyurethane foam be installed without a suitable fire-resistive thermal barrier.

c. ***CAUTION***: Spray foam should never be applied in thickness greater than two inches (5 cm) in a single application, since the fast, exothermic reaction can cause sufficient heat buildup to scorch or ignite the foam.

5. SPILL CLEANUP

a. If a major isocyanate spill occurs, the area should be immediately evacuated and ventilated. Only cleanup personnel, properly equipped with respiratory and eye protection, should remain. Protective equipment for clean-up crews should include a positive pressure, self-contained breathing apparatus, equipped with full face piece, hood or helmet and impervious clothing, footwear and gloves.

b. Leaking containers should be moved outdoors, and the isocyanate transferred to other clean, dry containers, which must then be tightly sealed.

c. Isocyanate spills should be covered with sawdust, vermiculite, fuller's earth, or other oil-absorbent material in quantities sufficient to absorb all of the liquid isocyanate. Shovel into an open-top container, transport outdoors and neutralize with a 3-8% ammonia solution by adding about 10 parts neutralizer per part of diisocyanate while stirring. Let this solution sit in an unsealed container for approximately 48 hours. Dispose of the fully neutralized material in full accordance with federal, state and local hazardous waste regulations.

d. Following removal of the neutralized isocyanate, the area should be washed down with an aqueous ammonia/detergent solution.

The above information is based on standard industrial practices and is meant to outline the hazards, but is not necessarily all-inclusive. Local conditions on specific jobs may indicate other precautions. Common sense and care in evaluating the possibility of hazards are essential. Nothing contained herein should supersede local laws, codes, ordinances or regulations, or the instructions of other manufacturers for the use of their products.

STANDARDS & REGULATIONS

The standards and regulations published by the Occupational Safety and Health Administration (OSHA), U.S. Department of Labor, where applicable, should be consulted for further detail and compliance. The following references provide additional safety information:

Code of Federal Regulations; CFR 42, Part 84

Code of Federal Regulations; CFR 29, Chapter XVII, Part 1910

Subpart G -- Occupational Health & Environmental Control

Sec. 1910.93, Air Contaminants
Sec. 1910.94, Ventilation

Subpart H -- Hazardous Materials
Sec. 1910.106, Flammable and Combustible Liquids
Sec. 1910.107, Spray Finishing using Flammable and Combustible Liquids

Subpart I -- Personal Protective Equipment

Sec. 1910.133, Eye and Face Protection

Footnotes:

* Consult Gaco Western for listing of test equipment currently available.

+ By U.S. Department of Interior, Bureau of Mines.

++Air shall meet at least Grade D specification requirements for breathing air as described in Compressed Gas Association Commodity Specification G-7-1-1966.