

- (2) Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.
- (3) Turning head side to side. Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.
- (4) Moving head up and down. Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling).
- (5) Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song.

***Rainbow Passage***

***When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.***

- (6) Bending over. The test subject shall bend at the waist as if he/she were to touch his/her toes.
  - (7) Normal breathing. Same as exercise (1).
- (b) Each test exercise shall be performed for one minute. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried. The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.

**B. Qualitative Fit Test (QLFT) Protocols**

**1. General**

- (a) The Program Administrator when administering QLFT shall be able to prepare test solutions, calibrate equipment and perform tests properly, recognize invalid tests, and ensure that test equipment is in proper working order.
- (b) The Program Administrator shall ensure that QLFT equipment is kept clean and well maintained so as to operate within the parameters for which it was designed.

**2. Irritant Smoke (Stannic Chloride) Protocol**

This qualitative fit test uses a person's response to the irritating chemicals released in the "smoke" produced by a stannic chloride ventilation smoke tube to detect leakage into the respirator.

(a) General Requirements and Precautions

- (1) The respirator to be tested shall be equipped with high efficiency particulate air (HEPA) or P100 series filter(s).
- (2) Only stannic chloride smoke tubes shall be used for this protocol.
- (3) No form of test enclosure or hood for the test subject shall be used.
- (4) The smoke can be irritating to the eyes, lungs, and nasal passages. The test conductor shall take precautions to minimize the test subject's exposure to irritant smoke. Sensitivity varies, and certain individuals may respond to a greater degree to irritant smoke. Care shall be taken when performing the sensitivity screening checks that determine whether the test subject can detect irritant smoke to use only the minimum amount of smoke necessary to elicit a response from the test subject.
- (5) The fit test shall be performed in an area with adequate ventilation to prevent exposure of the person conducting the fit test or the build-up of irritant smoke in the general atmosphere.

(b) Sensitivity Screening Check

The person to be tested must demonstrate his or her ability to detect a weak concentration of the irritant smoke.

- (1) The test operator shall break both ends of a ventilation smoke tube containing stannic chloride, and attach one end of the smoke tube to an aspirator squeeze bulb.
- (2) The test operator shall advise the test subject that the smoke can be irritating to the eyes, lungs, and nasal passages and instruct the subject to keep his/her eyes closed while the test is performed.
- (3) The test subject shall be allowed to smell a weak concentration of the irritant smoke before the respirator is donned to become familiar with its irritating properties and to determine if he/she can detect the irritating properties of the smoke. The test operator shall carefully direct a small amount of the irritant smoke in the test subject's direction to determine that he/she can detect it.

(c) Irritant Smoke Fit Test Procedure

- (1) The person being fit tested shall don the respirator without assistance, and perform the required user seal check(s).
- (2) The test subject shall be instructed to keep his/her eyes closed.

- (3) The test operator shall direct the stream of irritant smoke from the smoke tube toward the faceseal area of the test subject, using the low flow pump or the squeeze bulb. The test operator shall begin at least 12 inches from the facepiece and move the smoke stream around the whole perimeter of the mask. The operator shall gradually make two more passes around the perimeter of the mask, moving to within six inches of the respirator.
- (4) If the person being tested has not had an involuntary response and/or detected the irritant smoke, proceed with the test exercises.
- (5) The exercises identified in section I.A. 14. of this appendix shall be performed by the test subject while the respirator seal is being continually challenged by the smoke, directed around the perimeter of the respirator at a distance of six inches.
- (6) If the person being fit tested reports detecting the irritant smoke at any time, the test is failed. The person being retested must repeat the entire sensitivity check and fit test procedure.
- (7) Each test subject passing the irritant smoke test without evidence of a response (involuntary cough, irritation) shall be given a second sensitivity screening check, with the smoke from the same smoke tube used during the fit test, once the respirator has been removed, to determine whether he/she still reacts to the smoke. Failure to evoke a response shall void the fit test.
- (8) If a response is produced during this second sensitivity check, then the fit test is passed.

## APPENDIX 3

### Precision Environmental Respirator Cleaning Procedures (OSHA 1910.13 Appendix B-2)

These procedures are provided for employee use when cleaning respirators. They are general in nature, and the employee as an alternative may use the cleaning recommendations provided by the manufacturer of the respirators used by their employees, provided such procedures are as effective as those listed here. Equivalent effectiveness simply means that the procedures used must accomplish the objectives set forth in this Appendix, i.e., must ensure that the respirator is properly cleaned and disinfected in a manner that prevents damage to the respirator and does not cause harm to the user.

#### I. Procedures for Cleaning Respirators

- A. Remove filters, cartridges, or canisters. Disassemble facepieces by removing speaking diaphragms, demand and pressure-demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.
- B. Wash components in warm (110 deg. F maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.
- C. Rinse components thoroughly in clean, warm (110 deg. F maximum), preferably running water. Drain.
- D. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
  1. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at (110 deg. F); or,
  2. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at (110 deg. F); or,
  3. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.
- E. Rinse components thoroughly in clean, warm (110 deg. F maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces may result in dermatitis. In addition,

some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.

- F. Components should be hand-dried with a clean lint-free cloth or air-dried.
- G. Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.
- H. Test the respirator to ensure that all components work properly.

## APPENDIX 4

### Precision Environmental User Seal Check Procedures (OSHA 1910.134 Appendix B-1)

The individual who uses a tight-fitting respirator is to perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on. Either the positive and negative pressure checks listed in this appendix, or the respirator manufacturer's recommended user seal check method shall be used. User seal checks are not substitutes for qualitative or quantitative fit tests.

#### I. Facepiece Positive and/or Negative Pressure Checks

- A. Positive pressure check. Close off the exhalation valve and exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.
- B. Negative pressure check. Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

#### II. Manufacturer's Recommended User Seal Check Procedures

The respirator manufacturer's recommended procedures for performing a user seal check may be used instead of the positive and/or negative pressure check procedures provided that the employer demonstrates that the manufacturer's procedures are equally effective.

## APPENDIX 5

### **Precision Environmental Voluntary Use Procedure (OSHA 1910.134 Appendix D)**

#### Information for Employees Using Respirators When Not Required Under the Standard

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

## APPENDIX 6

### Precision Environmental's Respirator Hazard Assessment

The nature of Precision's work in the field is quite varied and can include the following potential exposures:

Asbestos - The potential for exposure exceeding the PEL are considered to be minimal with proper engineering protocols. Precision, however, requires its supervisors to perform personal air monitoring and all employees to wear proper respiratory protection during during all asbestos abatement and removal projects. Negative exposure assessments are maintained on file.

Lead - The potential for exposure exceeding the PEL are considered to be minimal with proper engineering protocols. Precision, however, requires its supervisors to perform personal air monitoring and all employees to wear proper respiratory protection during during all lead based paint abatement and removal projects. Negative exposure assessments are maintained on file.

Silica - The potential for exposure exceeding the PEL are considered to be minimal with proper engineering protocols. Negative exposure assessments are maintained on file.

Mold - There are no established PELs for microbial mitigation and exposures are considered to be minimal with proper engineering protocols. Precision, however, requires its supervisors and employees to wear proper respiratory protection during all microbial mitigation projects.

*Unique situations or projects such as potential exposure to acutely toxic or carcinogenic materials or work activities in confined or poorly ventilated locations as determined by the Project Managers or Program Administrator will be evaluated and monitored on a case by case basis. These situations or projects are not the norm but may require respirators with greater protection factors.*



**Section 7**

**Asbestos Abatement Program**

**1.0 PURPOSE**

To establish basic safe work practices and procedures for the abatement of asbestos containing materials (ACM) at all asbestos abatement jobsites where work is performed by Precision Environmental Company or Precision ProCUT employees.

**2.0 APPLICATION**

This procedure shall be followed on all Precision Environmental Company jobsites where asbestos abatement is performed by Precision Environmental or Precision ProCUT.

Compliance with local laws and regulations is mandatory. Where the customer's procedures are more protective than OSHA or local requirements, Precision Environmental will comply with the more protective requirements.

**3.0 RESPONSIBILITY**

The company **Safety Director** is solely responsible for all facets of this program and has full authority to make necessary decisions to ensure the success of this program. The Safety Director will develop written detailed instructions covering each of the basic elements in this program, and is the sole person authorized to amend these instructions. This company has authorized the Safety Director to halt any operation of the company where there is danger of serious personal injury.

**4.0 DEFINITIONS**

Amended Water Water containing a wetting agent or surfactant.

Asbestos The term asbestos includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

Asbestos Control Area An area where asbestos removal operations are performed which is isolated by physical boundaries to prevent the spread of asbestos dust, fibers, or debris.

Area Monitoring Sampling of asbestos fiber concentrations within the asbestos control area which is representative of the airborne concentrations of asbestos fibers, which may reach the breathing zone (12" of the nose/mouth).

Abatement Procedures to control fiber release from spray or trowel applied asbestos containing building materials. Includes removal only.

Airlock A system for permitting entrance or exit without permitting air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways at least 6 feet apart.

Air Monitoring The process of measuring the fiber content of a specific volume of air in a stated period of time. (Includes personnel and area monitoring).

Asbestos Containing Materials (ACM) Includes any existing construction material within the facility which contains > 1% asbestos.

Asbestos Workers Any workers involved in the disturbance or removal of existing asbestos materials.

Authorized Visitor The building owner, the building owner's representative or a representative of any regulatory or other agency having jurisdiction over the project.

Barrier Polyethylene sheeting which is used to separate contaminated work areas from uncontaminated areas by applying the sheeting to walls, floors and other structures.

Class I Asbestos Work Work activities involving the removal of Thermal System Insulation (TSI) and surfacing Asbestos Containing Material (ACM) and Presumed Asbestos Containing Material (PACM).

Class II Asbestos Work Work activities involving the removal of ACM, which is not thermal system insulation, or surfacing material. Includes but is not limited to, the removal of asbestos containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

Class III Asbestos Work Repair and maintenance operations, where "ACM", including thermal system insulation and surfacing material, is likely to be disturbed.

Class IV Asbestos Work Maintenance and custodial activities during which employees contact ACM and PACM and activities to clean up waste and debris containing ACM and PACM.

Clean Room An uncontaminated area or room, which is part of the worker decontamination enclosure system, which provisions for storage of workers' street clothes and protection equipment.

Competent Person One who is capable of identifying existing asbestos hazards in the work place and selecting the appropriate control strategy for asbestos exposure and who has the authority to take prompt corrective measures to eliminate them. For Class I and Class II work, one who is specially trained in a training course which meets EPA's requirements, and for Class III and IV work, one who is trained in accordance with EPA requirements for maintenance and custodial staff.

Contaminated Material Shall mean an area of material containing asbestos or coated with asbestos.

Disposal The transportation and final disposal of asbestos containing materials to an approved disposal site, in accordance with the Federal, State and Local Regulations.

Decontamination System A series of connected rooms, with curtained doorways between any two adjacent rooms, for the decontamination of workers or of materials and equipment. A

decontamination enclosure system always contains at least one airlock.

Encapsulant A liquid sealant material which is applied to asbestos containing material or asbestos contaminated material to limit the possible release of asbestos fibers into the ambient air. The encapsulant may be a penetrating type or a bridging type. The penetrating type moves into the asbestos material and bind the fibers together, while a bridging type covers over the surface of the asbestos and encloses the fibers.

Encapsulation All specified procedures necessary to coat asbestos-containing or asbestos-contaminated materials with an encapsulant to control the possible release of asbestos fibers into the ambient air.

Equipment Room A contaminated area or room, which is part of the worker decontamination enclosure system, with provision for storage of contaminated clothing and equipment.

Holding Area A chamber between the washroom and an uncontaminated area in the equipment decontamination enclosure system. The holding area comprises an airlock.

HEPA Filter Equipment High efficiency particulate air filtered vacuuming equipment with a filter system capable of collecting and retaining asbestos fibers. Filters shall be of 99.97 percent efficiency for retaining fibers of 0.3 microns in diameter or larger.

HEPA Filter A high efficiency particulate air (HEPA) filter capable of trapping and retaining 99.97% of asbestos particles greater than 0.3 microns in diameter.

Initial Exposure Assessment Initial monitoring performed at the initiation of each asbestos job to accurately determine the airborne concentrations of asbestos to which employees may be exposed.

Isolation Shall mean the act of partitioning off or sealing an area containing asbestos from the adjacent environment.

Medical Examinations Before exposure to airborne asbestos fibers, provide workers with a comprehensive medical examination as required by 29 CFR 1926.1101 and 1910.134. The same medical examination shall be given on an annual basis to employees engaged in an occupation involving asbestos fibers and within 30 calendar days before or after the termination of employment in such occupation.

Negative Air Machine A filtration system which utilizes a series of air filters in combination with an exhaust fan to reduce the level of airborne asbestos in a work area. The final filter in a negative air filtration unit should be a HEPA filter with an efficiency of no less than 99.97% of particles greater than 0.3 microns in diameter.

Negative Initial Exposure Assessment Demonstration by the employer that initial exposure assessments indicate that employee exposure during an operation is expected to be consistently below the PELs.

Permissible Exposure Limit (PEL) The permitted employee exposure level based on an 8 hour time-weighted average (TWA). The PEL for asbestos is 0.1 fiber per cubic centimeter of air TWA (8).

Personal Monitoring Sampling of asbestos fiber concentrations within the breathing zone of an employee.

Regulated or Control Areas A controlled area where all Class I, II and III asbestos work or other asbestos operations, which can or may exceed the PEL, must be performed. Regulated areas must be demarcated and have access limited to authorized persons only.

Removal Shall mean the dismantling and disposal of existing materials, components, equipment, and utilities. Removed items shall be handled, prepared for storage, transported to storage areas, and disposed of as specified.

Shower Room A room between the clean room and the equipment room in the worker decontamination enclosure system, with hot and cold or warm running water and suitably arranged for complete showering during decontamination. The shower room comprises an airlock between contaminated and clean areas. Portable showers shall be used at all locations unless noted otherwise specified.

Time Weighted Average The TWA is an 8-hour time weighted average airborne concentration of particles per volume of air. The Permissible Exposure Limit is 0.1 fiber/cubic centimeter as an 8-hour TWA as set forth in 29 CFR 1926.1101.

Wet Cleaning The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water, and by contaminated waste.

Work Area Asbestos Removal Work Area, area in which asbestos removal will be done. The area which is designated for the containment of the asbestos material.

## **5.0 PROCEDURES**

### **5.1 Pre-Job**

- 5.1.1 Asbestos abatement projects mandate a very thorough and consistent tracking system from the time of award to the project completion.
- 5.1.2 Notifications to the Ohio Department of Health, Local Air Quality District, and Ohio Environmental Protection Agency must first be generated. The local fire department may need to be informed of a change in the fire protection system, if applicable, and the local police and emergency medical services may also need to be informed of the project. All notifications should be sent certified mail in order to assure they were received. Asbestos abatement conducted outside the State of Ohio shall comply with all applicable local and state notifications.

- 5.1.3 The estimator and project manager shall review specifications, drawings and the conditions at the job site for "hazards" or unusual conditions that may exist. An Initial Exposure Assessment should be also be utilized to evaluate potential asbestos exposure.
- 5.1.4 Various projects may require additional paperwork including shop drawings, work area plans, schedules, storage area plans, fire and safety evaluation plan, worker's health and safety training programs including respiratory protection, and temporary electrical or temporary HVAC system control. All of these requirements will be addressed by Precision Environmental, as needed for the project.
- 5.1.5 Copies of Supervisor and worker qualifications, certifications, training and medical reports showing the employee's ability to perform the assignment and wear respiratory protection shall be available on site and/or furnished to the owner's representative.
- 5.1.6 During mobilization all projects shall have emergency telephone numbers and location of emergency services posted. As required by OSHA, personnel trained in First Aid shall be available on the jobsite. All MSDS data sheets shall be available from the Supervisor per requirements of the OSHA's Hazard Communications requirements.
- 5.1.7 Exposure Assessments
- **Initial** At the start of any work operations, an Initial Exposure Assessment must be performed. The purpose of an initial exposure assessment is to determine expected exposures that may be encountered during asbestos operations. The assessment must be performed by a competent person. An initial assessment will take into consideration monitoring results and all observations and information that may indicate employee exposure. Prior to conducting the initial assessment, and until it is documented that employees are not exposed at or above the PEL, or a negative exposure assessment has been made, it will be presumed that workers will be exposed above the TWA. Copies of initial exposure assessments shall be submitted to the owner's representative and maintained at the project location as required.
  - **Negative** Employee exposure may also be demonstrated to be below the PEL by a Negative Exposure Assessment. Monitoring data from projects within twelve months of the current project may be used. The projects must closely resemble the processes, types of material, control methods, work practices, and environmental conditions existing on the current project. Personnel training and experience must also be similar. The data must show that there is a high degree of certainty that employee exposures will not exceed the TWA and excursion limit.

5.2 Full Containment ACM Removal

During any removal of friable asbestos containing material (ACM), it is imperative the proper methods and procedures are selected. Under normal conditions, some non-friable materials containing asbestos would not be considered hazardous; however, this material will release airborne concentrations of asbestos fibers during demolition and removal and therefore shall be handled in accordance with removal and disposal procedures as specified herein. The removal of friable ACM requires specialized techniques to isolate the work area from the outer environment. One of the most commonly used techniques to abate these areas is the **Full Containment** method.

*Work Area Preparation*

- 5.2.1 The first step in full containment procedures involve the isolation of the project area. Precision Environmental shall post caution signs meeting the specifications of OSHA 29 CFR 1926.1101 at locations and approaches to a location where airborne concentrations of asbestos may exceed ambient background levels. Signs will be posted at a distance sufficiently far enough away from the work area to permit the employee/public to read the sign and take the necessary protective measures to avoid exposure. Additional signs may be posted as necessary following construction of work area enclosure barriers. Warning signs shall bear the following information:

**DANGER  
ASBESTOS  
CANCER AND LUNG DISEASE HAZARD  
AUTHORIZED PERSONNEL ONLY  
RESPIRATORS AND PROTECTIVE CLOTHING  
REQUIRED IN THIS AREA**

- 5.2.2 Labels will be affixed to all containers containing asbestos including waste containers. Labels will be used in accordance with OSHA's Hazard Communication Standard and will contain the following information:

**DANGER  
CONTAINS ASBESTOS FIBERS  
AVOID CREATING DUST  
CANCER AND LUNG DISEASE HAZARD**

Precision Environmental will notify all employers of employees who will be performing work within or adjacent to areas of asbestos abatement operations of the presence, location and quantity of ACM or PACM. Notification shall be in writing or personal communication.

- 5.2.3 Precision Environmental shall shut down and lockout electrical power to all work areas. Temporary power and lighting shall be installed in compliance with all applicable electrical code requirements and OSHA requirements for temporary electrical systems.

- 5.2.4 Precision Environmental shall shut down and lockout all heating, ventilation and air conditioning systems (HVAC) components that are in supply or pass through the work area. (Note: Interiors of existing duct work may require decontamination). Seal all intake and exhaust vents in the area with tape and 6-mil polyethylene. Also seal any seams in system components that pass through the work area. Removal all HVAC system filters and place in labeled 6 mil polyethylene bags for staging and eventual disposal as asbestos contaminated waste.
- 5.2.5 Precision Environmental shall provide sanitary facilities for abatement personnel outside of the enclosed work area and maintain them in a clean and sanitary condition throughout the project.
- 5.2.6 Precision Environmental shall preclean all moveable objects within the work area using a HEPA filtered vacuum and/or wet cleaning methods as appropriate. After cleaning, these objects shall be removed from the work area and carefully stored in an uncontaminated location. Drapes, upholstered furniture and other fabric items shall be cleaned as asbestos contaminated items utilizing HEPA vacuum techniques.
- 5.2.7 Precision Environmental shall preclean all fixed objects in the work area using HEPA filtered vacuums and/or wet cleaning techniques as appropriate. Careful attention must be paid to machinery behind grills or gratings where access may be difficult but contamination significant. Attention shall be paid to all wall, floor and ceiling penetrations behind fixed items. After precleaning fixed objects will be enclosed in a double layer of 4 mil polyethylene sheeting and seal securely in place with tape. Control panels, gauges, etc. in work area may require owner access during abatement. These shall be designated and enclosures constructed with access flaps sealed with waterproof tape.
- 5.2.8 Precision Environmental shall seal off all windows, doorways, elevator openings, corridor entrances, drains, ducts, grills, grates, diffuses, skylights and any other openings between the work are and uncontaminated areas outside of the work area with 4 mil polyethylene sheeting and tape.
- 5.2.9 Precision Environmental shall cover floors with two layers of 6-mil (minimum) sheeting. Additional layer(s) of sheeting shall be utilized as drop cloth(s) to aid in the cleanup of bulk materials. The layers of drop cloth plastic shall be installed so that they can be removed independently from the first two layers installed.
- 5.2.10 Plastic shall be sized to minimize seams. If the floor area necessitates seams, those on successive layers of sheeting shall be staggered to reduce the potential for water to penetrate to the flooring material. A distance of at least six feet between seams is sufficient. No seams will be located at any wall/floor joints. Floor sheeting shall extend at least 12" up the sidewalls of the work area.



- 5.2.11 Sheeting shall be installed in a fashion so as to prevent slips between successive layers of material. (Vinyl sheeting may be used for improved traction on floors) Where stairs or ramps are covered with plastic, 3/4" exterior grade plywood treads securely held in place will be provided.
- 5.2.12 All walls in the work area will be covered with polyethylene sheeting. Walls that are non-porous and will not be damaged by water, surfactant, encapsulant do not necessarily need protection. They can be decontaminated using HEPA vacuums and wet cleaning techniques. Walls with mortar joints (e.g. tile) are considered porous. In addition, openings through these walls to uncontaminated areas of the building must be sealed as described previously. Walls shall be covered with two layers of 4-mil polyethylene sheeting. Wall sheeting shall overlap floor sheeting by at least 12 inches beyond the wall/floor joint to provide a better seal against water damage and for negative pressure. Wall sheeting shall be secured adequately to prevent it from falling away from walls. This will require additional support/attachment when negative pressure ventilation is utilized. The inner most layer of polyethylene (farthest from the building surface) shall be installed as a "drop cloth". It shall be installed such that it can be removed independently from the outer most layer of polyethylene in conjunction with the layer of floor drop cloth.

*Decontamination Center*

- 5.2.13 Worker decontamination enclosure systems shall be provided at all locations where workers will enter or exit the work area. One system at a single location is preferred, these systems may consist of existing rooms outside of the work area, if layout is appropriate, that can be enclosed in plastic sheeting and are accessible from the work area. When this situation does not exist enclosure systems may be constructed out of metal, wood or plastic support as appropriate.
- 5.2.14 The worker decontamination enclosure system shall consist of at least a clean room, a shower room and an equipment room each separate from each other and from the work area by air locks. Entry to and exit from all airlock and decontamination enclosure system chambers shall be through curtained doorways consisting of two sheets of overlapping polyethylene sheeting. One sheet shall be secured at the top and left side, the other sheet at the top and right side. Both sets shall have weights attached to the bottom to insure that they hang straight and maintain a seal over the doorway when not in use.
- 5.2.15 Access between any rooms in the decontamination enclosure system shall be through an airlock with at least three feet separating each curtained doorway. Pathways into (from clean to contaminated) and out from (contaminated to clean) the work area shall be clearly designated.
- 5.2.16 The clean room shall be sized to adequately accommodate the work crew. Benches shall be provided as well as hooks for hanging up street clothes. Clean work clothes, clean disposable clothing, replacement filters for respirators, towels and other necessary items will be provided in adequate supply at the clean room. A

location for posting shall also be provided in this area. Lighting, heat and electricity shall be provided as necessary for comfort.

- 5.2.17 The shower room shall contain one or more showers as necessary to adequately accommodate workers. Each showerhead shall be supplied with hot and cold water adjustable at the tap. The shower enclosure will be constructed to ensure against leakage of any kind. Shower water will be drained, collected and filtered through a system with at least 0.5 - 1.0 micron particle size collection capability.
- 5.2.18 The equipment room shall be used for storage of equipment and tools at the end of a shift after they have been decontaminated using a HEPA filtered vacuum and/or wet cleaning techniques as appropriate. Replacement filters (in sealed containers until used) for HEPA vacuums and negative pressure ventilation equipment. Extra tools, containers of surfactant and other materials and equipment that may be required during the abatement may also be stored here as needed. A dry lined drum with a labeled 6-mil polyethylene bag for collection of disposable clothing shall be stored in this room. Contaminated footwear (e.g. rubber boots, other reusable footwear) shall be stored in this area for reuse the following workday.

#### *Work Area*

- 5.2.19 Emergency exits shall be established and clearly marked with duct tape, arrows or other effective designations to permit easy location from anywhere within the work area. They shall be secured to prevent access from uncontaminated areas and still permit emergency exiting. These exits shall be properly sealed with polyethylene sheeting, which can be cut to permit egress if needed. These exits may be the worker decontamination enclosure, the waste pass-out airlock and/or other alternative exits satisfactory to fire officials.
- 5.2.20 The contaminated work area shall be separated from uncontaminated, occupied areas of the building by the construction of airtight barriers. Walls shall be constructed of wood or metal framing to support barriers in all openings larger than 4' x 8'. A sheeting material (plywood, drywall) of at least 3/8" thickness shall be applied to work side of barrier. Cover both sides of partition with a double layer of 6-mil polyethylene sheeting with staggered joints and seal in place. Caulk edges of partition at floor, ceiling, walls and fixtures to form an airtight seal.
- 5.2.21 Following completion of the construction of all polyethylene barriers and decontamination system enclosures, allow overnight settling to insure that barriers will remain intact and secured to walls and fixtures before beginning actual abatement activities.
- 5.2.22 All polyethylene barriers inside the work place, in the worker decontamination enclosure system, in the waste container pass-out airlock and at partitions constructed to isolate the work area from occupied areas shall be inspected at least twice daily, prior to the start of each day's abatement activities and following the completion of the day's abatement activities. Smoke tubes shall be used to test the effectiveness of the barrier system as required.

- 5.2.23 At any time during the abatement activities after barriers have been erected, if visible material is observed outside of the work area or if damage occurs to barriers, work shall immediately stop, repairs be made to barriers, and debris/residue cleaned up using appropriate HEPA vacuuming and wet mopping procedures.
- 5.2.24 If air samples collected outside of the work area during abatement activities indicate airborne fiber concentrations greater than 0.01 f/cc or pre-measured background levels (whichever is lower) work shall immediately stop for inspection and repair of barriers. Cleanup of surfaces outside of the work area using HEPA vacuums or wet cleaning techniques may be necessary.
- 5.2.25 Precision Environmental Company shall install and initiate operation of negative pressure ventilation equipment as needed to provide one air change in the work area every 15 minutes. Openings made in the enclosure system to accommodate these units shall be made airtight with tape and/or caulking as needed. If more than one unit is installed, they should be turned on one at a time, checking the integrity of wall barriers for secure attachment and need for additional reinforcement. Insure that adequate power supply is available to satisfy the requirements of the ventilating units. Negative pressure ventilation units shall be exhausted to the outside of the building. They shall not be exhausted into occupied areas of the building. Twelve-inch extension ducting shall be used to reach from the work area to the outside when required. Careful installation, air monitoring and daily inspections shall be done to insure that the ducting does not release fibers into uncontaminated building areas.

***ACM Removal Procedure***

- 5.2.26. Wet all asbestos containing material with an amended water solution using equipment capable of providing a fine spray mist; in order to reduce airborne fiber concentrations when the material is disturbed. Do not allow excessive water to accumulate in the work area. Maintain a high humidity in the work area by misting or spraying to assist in fiber settling and reduce airborne concentrations. Wetting procedures are not equally effective on all types of asbestos containing materials but shall none-the-less be used in all cases.
- 5.2.27 Saturated asbestos containing material shall be removed in manageable sections. Removed material will be containerized before moving to a new location for continuance of work. Surrounding areas shall be periodically sprayed and maintained in a wet condition until visible material is cleaned up.
- 5.2.28 Material removed from building structures or components shall not be dropped or thrown to the floor. Material should be removed as intact sections or components whenever possible and carefully lowered to the floor. If this cannot be done for materials greater than 50 feet above the floor, a dust-tight chute shall be constructed to transport the material to containers on the floor or the material may be containerized at elevated levels (e.g. on scaffolds) and carefully lowered to the

ground by mechanical means.

- 5.2.29 For materials between 15 and 50 feet above the ground they may be containerized at elevated levels or dropped onto inclined chutes or scaffolding for subsequent collection and containerization.
- 5.2.30 Containers shall be sealed when full. Bags shall not be overfilled. ACM shall be adequately wet before sealing containers. They should be securely sealed to prevent accidental opening and leakage by tying tops of bags in an overhead bow or by taping in gooseneck fashion. (Bags may be placed in drums for staging and transportation to the landfill. Bags shall be decontaminated on exterior surfaces by wet cleaning and HEPA vacuuming before being placed in clean drums and sealed with locking ring tops).
- 5.2.31 Large components removed intact may be wrapped in 2 layers of 6-mil polyethylene sheeting secured with tape for transport to the landfill. Asbestos containing waste with sharp-edged components (e.g. nails, screws, metal lathe, tin sheeting) will tear polyethylene bags and sheeting and shall be placed into drums for disposal.
- 5.2.32 After completion of all stripping work, surfaces from which asbestos containing materials have been removed shall be wet brushed and sponged or cleaned by some equivalent method to remove all visible residue.
- 5.2.33 Special circumstances (e.g. live electrical equipment) may prohibit the adequate use of wet methods to reduce fiber concentrations. For these situations dry removal may be required and requiring special permits from the relevant agencies.

*Clean-up Procedures*

- 5.2.34 Remove and containerize all visible accumulations of asbestos containing material and asbestos contaminated debris utilizing rubber dustpans and rubber squeegees to move material around. Special care shall be taken to minimize damage to floor sheeting. Remove "drop cloth" layer of polyethylene sheeting from walls and floor.
- 5.2.35 After removal of "drop cloth" layer of polyethylene the following will be in place: (1) two layers of polyethylene sheeting on the floor, (2) one layer of polyethylene sheeting on walls, and polyethylene layers(s) over equipment and wall or ceiling penetrations, and temporary barriers separating the work area from non-work areas.
- 5.2.36 All surfaces in the work area shall be cleaned using cloths, mops and sponges as appropriate. Excess water and gross wet debris shall be collected with a wet-dry shop vacuum. The vacuum shall be decontaminated prior to removal from the work area.
- 5.2.37 At this time, a thin coat of an encapsulating agent shall be applied to all surfaces in the work area to seal in non-visible residue including structural members, building

components, plastic sheeting on walls and floors, and coverings of non-removable items. If insulation or acoustical materials are to be reapplied to the abated area, be certain that the encapsulant selected will permit good adhesion to the substrate. Negative air machines may be temporarily turned off while spraying encapsulant, but must be turned on immediately at completion of spray operations.

- 5.2.38 After encapsulant has dried, the two layers of polyethylene sheeting should be removed from the floor and one layer from the walls. There should remain the following in place: polyethylene layer(s) over equipment, wall and ceiling penetrations, temporary barriers separating work area from non-work areas, decontamination units, and negative pressure ventilation units.
- 5.2.39 Tools and equipment should be HEPA vacuumed, wet cleaned and removed from the work area during the cleaning phase when they will no longer be needed to perform scheduled tasks. Scaffolds, ladders and temporary lighting shall remain in the work area to facilitate final visual inspection.
- 5.2.40 Inspect the work area for visible residue. If any accumulation of residue is observed, it will be assumed to be asbestos and the cleaning cycle repeated. Visual inspection shall not be performed until all surfaces are dry.
- 5.2.41 Following the satisfactory completion of aggressive clearance air monitoring, the remaining barriers may be removed and properly disposed of. A final visual inspection by the Precision and/or owner's representative shall insure that no contamination remains in the work area.

### 5.3 Glovebag Procedures

The start of each project requires a project layout and quality control format. The designated work area is secured by means of asbestos warning tape and signs. The information provided by the warning signs shall clearly acknowledge the health and safety hazards to potential entrants arriving at the project site. The existing (HVAC) servicing the project area shall be isolated or shutdown. Polyethylene sheeting shall be placed on the floor beneath the work area.

When these phases are completed the project may proceed. The following will serve as a guideline for glovebag abatement projects:

- 5.3.1 Mix the surfactant with water in a sprayer type mechanism as per manufacturer's directions.
- 5.3.2 Have each employee put on an approved HEPA cartridge respirator and check the face-fit.
- 5.3.3 Have each employee put on a disposable full-body suit, remembering the hood goes over the respirator straps.
- 5.3.4 Check the pipe where the work will be performed. If it is damaged (broken

lagging, hanging, etc.), wrap the entire length of the pipe in polyethylene plastic and "candy stripe" it with duct tape. A common error when doing glovebag work is forgetting that loose pipe lagging several feet or even several yards away from the glovebag work may be jarred loose by the activity. This is one of the common causes of high airborne fiber concentrations during glovebag work. The other problem is failure to clean up debris on the floor and other surfaces which has accumulated and contains asbestos.

- 5.3.5 Slit the top of the glovebag open (if necessary) and cut down the sides to accommodate the size of the pipe (about two inches longer than the pipe diameter).
- 5.3.6 Place the necessary tools into the pouch located inside the glovebag. This will usually include the bone saw, utility knife, rags, scrub brush and wire cutters.
- 5.3.7 Place one strip of duct tape along the edge of the open top slit of the glovebag for reinforcement.
- 5.3.8 Place the glovebag around the section of pipe to be worked on and staple the top together through the reinforcing duct tape. Staple at intervals of approximately one inch. Next, fold the stapled top flap back and tape it down with a strip of duct tape. This should provide an adequate seal along the top. Next, duct tape the ends of the glovebag to the pipe itself, previously covered with plastic or duct tape.
- 5.3.9 Insert the wand from the water sprayer through the sleeve. Using duct tape, tape and seal sleeve tightly around the wand to prevent air leakage.
- 5.3.10 One person places his hands into the long-sleeved gloves while the second person directs the water spray at the work.
- 5.3.11 Once the ends are cut, the section of insulation should be slit from end to end using the utility knife. The cut should be made along the bottom of the pipe and water continuously supplied. Again, care should be taken when using the knife not to puncture the bag. Some insulation may have wires to be clipped as well.
- 5.3.12 Spray all tools with water inside the bag and place back into pouch.
- 5.3.13 The insulation can now be lifted off the pipe and gently placed in the bottom of the bag.
- 5.3.14 Using the scrub brush, rags and water, scrub and wipe down the exposed pipe inside the glovebag.
- 5.3.15 Remove the water wand from the water sleeve and attach the small nozzle from the HEPA filtered vacuum. Turn on the vacuum only briefly to collapse the bag.
- 5.3.16 Remove the vacuum nozzle and twist the water sleeve closed and seal with duct tape.

- 5.3.17 From outside the bag, pull the tool pouch away from the bag and twist it to separate it from the bag. Place duct tape over the twisted portion and then cut the tool bag from the glovebag without cleaning. Alternatively, the tool pouch with the tools can be placed in a bucket of water, opened underwater, and the tools cleaned and dried without releasing asbestos into the air.
- 5.3.18 With the removed insulation in the bottom of the bag, twist the bag several times and tape it to keep the material in the bottom during removal of the glovebag from the pipe.
- 5.3.19 Remove the tape and open the top of the glovebag and fold it down into the disposal bag.
- 5.3.20 Remove the disposable suits and place these into the bag with the waste.
- 5.3.21 Twist the top of the bag closed, fold this over, and seal with duct tape. Label the bag with a warning label.

5.4 Removal of Resilient Floor Tile and Floor Tile Mastic

*Floor Tile*

- 5.4.1 Place critical barriers over all openings to the regulated area.
- 5.4.2 Tiles in areas exposed to heavy foot traffic will usually adhere the tightest. Therefore, select those areas exposed to the least amount of foot traffic for starting removal.
- 5.4.3 Individual tiles should be removed as a complete unit in as large a piece as possible. Water with "wetting agent" (dishwashing detergent or commercially prepared surfactant) may be used to soak tiles loose.
- 5.4.4 Continue loosening by prying tiles with a long-handled scraper and apply a mist of water as work progresses.
- 5.4.5 Removed materials should be placed in a heavy duty (6 mil) plastic bag for proper disposal.
- 5.4.6 HEPA vacuums shall be used to clean floors after abatement.

*Mastic*

- 5.4.7 Place critical barriers over all openings to the regulated area and polyethylene sheeting 3 feet up all walls adjacent to mastic removal.
- 5.4.8 Apply mastic remover with the sprayer on a section of the mastic to be removed. Apply enough product so that during agitation you are working with material that has the consistency of motor oil.

- 5.4.9 Using the floor squeegee, push the liquefied mastic from one section to the next as removal progresses. Add additional mastic remover as needed to maintain the consistency of motor oil.
  - 5.4.10 Soaking of the mastic should not be necessary. Follow the manufacturer's instructions as indicated. Immediate agitation with the course bristle broom will accelerate the removal of the mastic.
  - 5.4.11 Using the absorbent, pick up the liquefied mastic and dispose of in accordance with Federal, State, County and Local regulations.
  - 5.4.12 Mop and rinse all abated surfaces with 110°F water and deodorizing detergent.
- 5.5 Disposal Procedures
- 5.5.1 As the work progresses, to prevent exceeding available storage capacity on site, sealed and labeled containers of asbestos containing waste shall be removed and transported to the prearranged disposal location.
  - 5.5.2 Disposal must occur at an authorized site in accordance with Federal, State and Local regulations.
  - 5.5.3 All dump receipts, trip tickets, transportation manifests or other documentation of disposal shall be delivered to the building owner for his records. The manifest shall include the names and addresses of the building owner, Precision Environmental Company, job location, disposal site, the estimated quantity of the asbestos waste and the type of containers used. The form should be signed by the owner, Precision Environmental, and disposal site operator, as the possession of the material changes hands.
  - 5.5.4 Once drums, bags and wrapped components have been removed from the work area, they shall be loaded into an enclosed truck for transportation. The enclosed cargo area of the truck shall be free from debris and lined with 6 mil polyethylene sheeting to prevent contamination from leaking or spilled containers. Floor sheeting shall be installed first and extended up the sidewalls. Wall sheeting shall be overlapped and taped into place.
  - 5.5.5 Drums shall be placed on level surfaces in the cargo area and packed tightly together to prevent shifting and tipping. Large structural components shall be secured to prevent shifting of bags.
  - 5.5.6 Personnel loading asbestos containing waste shall be protected by disposable clothing; including head, body and foot protection and at a minimum, half-face piece, air-purifying, dual cartridge respirators equipped with HEPA filters.



- 5.5.7 Bags, Drums and components shall be inspected as they are off-loaded at the disposal site. Waste containers shall be placed on the ground at the disposal site; not pushed or thrown out of trucks.
- 5.5.8 Personnel off-loading containers at the disposal site shall wear protective equipment consisting of disposable clothing; including head, body and foot protection and at minimum, half-face piece, air-purifying, dual cartridge respirators equipped with HEPA filters.
- 5.5.9 Following the removal of all containerized waste, the truck cargo area shall be decontaminated using HEPA vacuums, and/or wet methods to meet the "no visible residue" criteria. Polyethylene sheeting shall be removed and discarded along with contaminated cleaning materials and protective clothing, in bags or drums at the disposal site.

## **Section 8**

### **License, Worker's Compensation, Insurance**

STATE OF OHIO  
DEPARTMENT OF HEALTH

**ASBESTOS HAZARD ABATEMENT CONTRACTOR LICENSE**

Be it known that **Precision Environmental Company** is hereby licensed, having qualified as required by law in accordance with rules adopted by the Public Health Council relative to Asbestos Contractors.

In Witness whereof, I have subscribed my name and affixed the seal of the Department of Health State of Ohio on **February 07, 2011** in the city of Columbus.

License number: **AC1154**

Effective Until: **February 26, 2012**

In witness thereof



**Karen F. Hughes**  
**Acting Director**  
**Ohio Department of Health**





**Bureau of Workers' Compensation**

30 W. Spring St.  
Columbus, OH 43215

### Certificate of Premium Payment

This certifies the employer listed below has paid into the Ohio State Insurance Fund as required by law. Therefore, the employer is entitled to the rights and benefits of the fund for the period specified. For more information, call 1-800-OHIOBWC.

This certificate must be conspicuously posted.

Policy No. and Employer

Period Specified Below

947659

01/01/2011 Thru 08/31/2011

PRECISION ENVIRONMENTAL COMPANY  
5500 OLD BRECKSVILLE RD  
INDEPENDENCE, OH 44131-1508



ohiobwc.com

*Stephen Bucher*  
Administrator/CEO

You can reproduce this certificate as needed.

### Ohio Bureau of Workers' Compensation

#### Required Posting

Effective Oct. 13, 2004, Section 4123.54 of the Ohio Revised Code requires notice of rebuttable presumption. Rebuttable presumption means an employee may dispute or prove untrue the presumption (or belief) that alcohol or a controlled substance not prescribed by the employee's physician is the proximate cause (main reason) of the work-related injury.

The burden of proof is on the employee to prove the presence of alcohol or a controlled substance was not the proximate cause of the work-related injury. An employee who tests positive or refuses to submit to chemical testing may be disqualified for compensation and benefits under the Workers' Compensation Act.



**Bureau of Workers' Compensation**

You must post this language with the certificate of premium payment.





# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)  
2/17/2011

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> The Everts Tremaine Flicker Company 1100 Chester Ave. #300  Cleveland OH 44115		<b>CONTACT NAME:</b> Diane Fehlner <b>PHONE:</b> (216) 621-7183 <b>FAX:</b> (216) 621-4755 <b>E-MAIL ADDRESS:</b> <b>PRODUCER CUSTOMER ID #:</b> 00000089	
<b>INSURED</b> Precision Environmental Company The Precision Company 5500 Old Bracksville Road  Independence OH 44131		<b>INSURER(S) AFFORDING COVERAGE</b> <b>INSURER A:</b> Motorists Mutual NAIC # 14621 <b>INSURER B:</b> <b>INSURER C:</b> <b>INSURER D:</b> <b>INSURER E:</b> <b>INSURER F:</b>	

**COVERAGES**      **CERTIFICATE NUMBER:** 2010 Precision Cert      **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL SUBR INSR WYO	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
	<b>GENERAL LIABILITY</b> <input type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> OCCUR  GENL AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PROJECT <input type="checkbox"/> LOC					EACH OCCURRENCE \$ DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ PRODUCTS - COMP/DP AGG \$
<b>A</b>	<input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS		3323289000	2/17/2011	2/17/2012	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ Rental reimbursement-30 days \$ 30 Medical payments \$ 1,000
	<input type="checkbox"/> UMBRELLA LIAB <input type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> DEDUCTIBLE <input type="checkbox"/> RETENTION \$					EACH OCCURRENCE \$ AGGREGATE \$
	<b>WORKERS COMPENSATION AND EMPLOYERS LIABILITY</b> <input type="checkbox"/> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory In NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A			<input type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$

**DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES** (Attach ACORD 101, Additional Remarks Schedule, if more space is required)  
 Additional Insured to be included if necessary, per written contract

<b>CERTIFICATE HOLDER</b>  To Whom This May Concern	<b>CANCELLATION</b>  SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	<b>AUTHORIZED REPRESENTATIVE</b>  J. Brickenden/DCF

## **Section 9**

### **Product Data and Material Safety Data Sheets**

# PRODUCT DATA

## PENEWET®

### DESCRIPTION

Product No.: 6450 clear

Penewet is an ready-to-use, colorless wetting agent/surfactant solution incorporating advanced concepts in surface chemistry. It provides powerful wetting, penetrating and coalescing of asbestos containing materials (ACM) to permit handling and removal of these materials under damp, dust-free conditions. Penewet is a nonflammable water based nontoxic liquid which will not corrode aluminum components of spray equipment.

### PROPERTIES

- Solids by Weight: 10 +/-2%
- Volatile: Water
- Average particle size: 0.2 microns
- Viscosity @ 77°F: 50-55 Krebs Units
- Weight per gallon @ 77°F: 8.8 lbs.
- Ionic nature: Non-ionic
- Flammability: Non-flammable
- Phosphate free?: Yes
- Surface tension: 31 dynes/cm.
- Coverage: 500 sq.ft./gal.
- Shelf Life: @ 77°F, 36 months minimum, (in original factory sealed containers).
- Odor: Applied indoors, virtually odorless.
- Packaged: 5, and 55 gallon containers

### APPLICATION INFORMATION

**SURFACTANT/WETTING AGENT:** Penewet is a ready-to-use formulation. Sealing microscopic residual fibers after asbestos removal is mandatory on every project. Prior to post-removal air monitoring, apply one coat to all exposed surfaces prior to post removal air monitoring.

**PULLDOWN BY MISTING:** Pulldown by misting the contaminated air is an effective technique prior to post removal air-monitoring. To pull down free-floating asbestos fibers effectively, stand in the center of the room and hold the spray gun as close to the ceiling as possible. A mist should be sprayed parallel to the ceiling in every direction or in a circle. Apply one coat to the polyethylene walls and floor.

(Over)



#### FIBERLOCK TECHNOLOGIES, INC.

150 Dascomb Road  
Andover, MA 01810 U.S.A.  
Toll Free: (800) 342-3755  
Tel.: (978) 623-9987 Fax: (978) 475-6205  
[www.fiberlock.com](http://www.fiberlock.com)



# **APPLICATION PROCEDURES FOR PENEWET ASBESTOS WETTING COMPOUND**

## **PREPARATION**

Prior to application, stir thoroughly to achieve a uniform consistency. Penewet is pre-mixed, water addition is not necessary.

## **APPLICATION EQUIPMENT**

Professional models of all brands of spray equipment can be used to successfully apply Penewet. Use the settings below when applying Penewet:

Pressure: 2500-2700 psi  
Hose length: 100 feet  
Hose diameter: 1/4 inch  
Tip size: .015 - .027 (orifice size)  
Fan size: 12 inches

## **CLEAN UP**

Tools and drippings should be cleaned with soap and water before coating dries.

## **SHIPPING AND STORAGE INFORMATION**

Shelf Life: 3 years in sealed containers

Storage Temperature: Keep from freezing. Store in a dry place at temperatures between 40°F - 100°F

Flash Point: None.

**KEEP OUT OF REACH OF CHILDREN  
FOR PROFESSIONAL USE ONLY  
KEEP FROM FREEZING**

Cautions: Approved respirators must be used to prevent inhalation of asbestos fibers that may be present in the air. Protective clothing should be worn. Tools and drippings should be cleaned immediately with clean, soapy water before the coating dries. Careful consideration should be given to all Environmental Protection Agency (EPA), OSHA and state regulations in effect at the time of application of Penewet. The EPA, through the Office of Pesticides and Toxic Substances has issued reports headed "Guidance for Controlling Friable Asbestos-Containing Materials in Buildings," EPA 560/S 85-024, June 1985, and "Managing Asbestos in Place, A Building Owner's Guide to Operations and Maintenance Programs for Asbestos Containing Materials," 201-2003, July 1990, containing the proper data, cautions, and procedures for asbestos control. Copies are available from the Environmental Assistance Division, TS-799, TSCA Assistance Information Service, U.S. EPA, 401 M Street SW, Washington, DC 20460, (202) 554-1404.

Keep from freezing. Do not store at temperatures above 100°F.

These suggestions and data are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and methods of use of this product are beyond our control. Neither Fiberlock Technologies, Inc., nor our agents shall be responsible for the use or results of use of this product or any procedures or apparatus mentioned. We recommend that the prospective user determine the suitability of Penewet for each specific project and for the health and safety of personnel working in the area.

# MATERIAL SAFETY DATA SHEET

(Essentially similar to OSHA form 174, Sept. 1985 - For Compliance with OSHA's Hazard Communication Standard, 29CFR 1910.1200)

## Section I - Product Identity:

**Penewet® (6450)**

Manufacturer's Name:  
Fiberlock Technologies, Inc.  
150 Dascomb Road  
Andover, MA 01810

Date of Preparation: September 15, 2002  
Information Telephone Number: (978) 623-9987  
Emergency Telephone Numbers:  
Weekdays: (978) 623-9987  
After hours, weekends & holidays: (978) 887-5926, or  
"CHEM-TEL" Emergency Contact Number: (800) 255-3924

## Section II - Hazardous Ingredients/Identify Information

HAZARDOUS COMPONENT	COMMON NAME(S)	%	CAS. NO.	OSHA PEL	OR	ACGIH TLV
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None per the limits for reporting set forth in 29CFR 1910.1200

## Section III - Physical/Chemical Characteristics

Boiling Points of Major Constituent (Water)	212°F	Specific Gravity (H <sub>2</sub> O=1) Wgt./gal.	1.01
Vapor Pressure (mm Hg) @ 68°F	ND	Melting Point Water (Ice)	32°F
Vapor Density (AIR=1) Heavier Lighter	ND	Evaporation Rate (Butyl Acetate=1)	Slower
Solubility in Water	Complete	Appearance: Odor:	Clear solution Odorless

## Section IV - Fire and Explosion Hazard Data (Nonflammable)

Flash Point: None	Flammable Limits: LEL: N/A UEL: N/A	DOT Hazard Class: Not Regulated	Marking: "Keep From Freezing"
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Special Firefighting Properties: N/A Unusual Fire Explosion: N/A

## Section V - Reactivity Data

Hazardous Polymerization: Won't occur Stability: Stable Incompatibility: N/A  
Hazardous Decomposition: N/A Conditions to Avoid: N/A

## Section VI - Health Hazard Data, Toxicity Data

Route(s) of Entry: None for skin, inhalation and ingestion.  
Carcinogenicity NTP: No IARC Monographs: No OSHA Regulated: No Signs Symptoms: N/A  
Health Hazards (Acute and Chronic): N/A Medical Conditions: N/A

EMERGENCY AND FIRST AID PROCEDURES: Eyes: Flush with water. Skin: Wash with soap/water. Remove contaminated clothing.  
Ingestion: Induce vomiting. Seek immediate medical attention. Inhalation: Remove to fresh air.

### SUPPLEMENTAL INFORMATION

To comply with New Jersey DOH Right-To-Know labeling law (N.J.A.C. 8:59 - 5.1 & 5.2)

**CAS. No.:**

7732-18-5  
68131-39-5  
64-02-8  
Not Avail.\*  
Not Avail.\*  
Contents partially unknown

**CHEMICAL INGREDIENTS:**

Water  
Alcohol ethoxylate  
Tetrasodium EDTA  
Alkoxylated linear alcohol  
Hydroxyethyl cellulose

HMIS HAZARD RATING			
Health 1	Flammability 0	Reactivity 0	Personal Protection A
HAZARD INDEX: 0=Minimal, 1=Slight, 2=Moderate, 3=Serious, 4=Severe			
PERSONAL PROTECTION CODE			
A=Safety Glasses			

## **Section VII: Precautions for Safe Handling and Use**

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**IN CASE MATERIAL IS RELEASED OR SPILLED:** Flush area with water. Mop up and hold for disposal.

**WASTE DISPOSAL METHOD:** Any method in accordance with local, state and federal regulations.

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:** Keep container sealed when not in use. Do not store at elevated temperatures.

**OTHER PRECAUTIONS:** Eye protection recommended.

Ventilation: N/A

## **Section VIII: Control Measures**

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**RESPIRATORY PROTECTION:** None needed

**PROTECTIVE GLOVES:** N/A

**EYE PROTECTION:** Use safety eyewear including side shields, face shields, or chemical splash goggles (ANSI Z-87.1 or approved equivalent).

**OTHER PROTECTIVE EQUIPMENT:** N/A

**WORK HYGIENIC:** N/A

# PRODUCT DATA

## FIBERSET® PM

### DESCRIPTION

Product No.: 7470 white, 7475 clear, 7480 blue

Fiberset PM is a pre-mixed "lockdown" sealing treatment for microscopic residual fibers present after removal of asbestos containing material (ACM). Fiberset PM is a ready-to-use, class "A" fire rated coating that provides a flexible barrier over residual fibers to insure final air clearance. Fiberset PM and Fiberset FT are the only UL® classified (#R13770) lockdowns accepted for fluted, cellular and corrugated deck assemblies. Fiberset PM is compatible with most leading brands of replacement fireproofing and flooring adhesives. Fiberset PM can also be used to penetrate asbestos contaminated soil in crawl spaces. Fiberset PM is a water based nontoxic coating which employs advanced 100% acrylic resin technology to extend the life expectancy of airless spray equipment.

UL Classification: ASTM E-119

UL Category: Encapsulant Materials



### PROPERTIES

- Volatile: Water
- Average particle size: 0.2 microns
- Viscosity @ 77°F: 55-60 Krebs Units
- Weight per gallon @ 77°F: 8.5 lbs.
- Film Hardness: Excellent
- Film Flexibility: Excellent
- Impact Resistance: Excellent
- Water resistance of dry film: Excellent
- Bond Strength to concrete/steel: Excellent
- Coverage: not less than 500 sq. ft./gal.  
(as specified by UL)
- Flash point: Tag Closed Cup, Non-combustible water based product.
- Dry Time 1 - 2 hours
- Shelf Life: @ 77°F, 36 months minimum, (in original factory sealed containers).
- Odor: virtually odorless.
- Finish: slight gloss
- Packaged: 5, and 55 gallon containers

### APPLICATION INFORMATION

**LOCKDOWN:** Sealing microscopic residual fibers after asbestos removal is mandatory on every project. Prior to post-removal air monitoring, apply one coat to all exposed surfaces. Fiberset PM has been accepted as part of a UL Classified Fireproofing System for use with Retro-Guard® manufactured by W.R. Grace & Co., Conn.

**PULLDOWN BY MISTING:** Pulldown by misting the contaminated air is an effective technique prior to post removal air-monitoring. To pull down free-floating asbestos fibers effectively, stand in the center of the room and hold the spray gun as close to the ceiling as possible. A mist should be sprayed parallel to the ceiling in every direction or in a circle. Apply one coat to the polyethylene walls and floor.

(Over)



#### FIBERLOCK TECHNOLOGIES, INC.

150 Dascomb Road  
Andover, MA 01810 U.S.A.  
Toll Free: (800) 342-3755  
Tel.: (978) 623-9987 Fax: (978) 475-6205  
www.fiberlock.com

# APPLICATION PROCEDURES FOR FIBERSET PM

## PREPARATION

Prior to application, stir thoroughly to achieve a uniform consistency. Fiberset PM is pre-mixed, water addition is not necessary.

## APPLICATION EQUIPMENT

Professional models of all brands of spray equipment can be used to successfully apply Fiberset PM. Use the settings below when applying Fiberset PM:

Pressure: 2500-2700 psi  
Hose length: 100 feet  
Hose diameter: 1/4 inch  
Tip size: .015 - .025 (orifice size)  
Fan size: 12 inches

## CLEAN UP

Tools and drippings should be cleaned with soap and water before coating dries.

## SHIPPING AND STORAGE INFORMATION

Shelf Life: 3 years in sealed containers

Storage Temperature: Keep from freezing. Store in a dry place at temperatures between 40°F - 100°F

Flash Point: None.

**Note: Fiberset PM is part of a UL Classified Fireproofing System for use with Classified types RG and RG1 cementitious mixtures manufactured by Zonolite Construction Products Division W.R. Grace & Co., Conn.**

**KEEP OUT OF REACH OF CHILDREN  
FOR PROFESSIONAL USE ONLY  
KEEP FROM FREEZING**

Cautions: Approved respirators must be used to prevent inhalation of asbestos fibers that may be present in the air. Protective clothing should be worn. Tools and drippings should be cleaned immediately with clean, soapy water before the coating dries. Careful consideration should be given to all Environmental Protection Agency (EPA), OSHA and state regulations in effect at the time of application of Fiberset PM. The EPA, through the Office of Pesticides and Toxic Substances has issued reports headed "Guidance for Controlling Friable Asbestos-Containing Materials in Buildings," EPA 560/5-85-024, June 1985, and "Managing Asbestos in Place, A Building Owner's Guide to Operations and Maintenance Programs for Asbestos Containing Materials," 20T-2000, July 1990, containing the proper data, cautions, and procedures for asbestos control. Copies are available from the Environmental Assistance Division, TS-799, TSCA Assistance Information Service, U.S. EPA, 401 M Street SW, Washington, DC 20460, (202) 554-1404.

Keep from freezing. Do not store at temperatures above 100°F.

These suggestions and data are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and methods of use of this product are beyond our control. Neither Fiberlock Technologies, Inc., nor our agents shall be responsible for the use or results of use of this product or any procedures or apparatus mentioned. We recommend that the prospective user determine the suitability of Fiberset PM for each specific project and for the health and safety of personnel working in the area.

# MATERIAL SAFETY DATA SHEET

(Essentially similar to OSHA form 174, Sept. 1985 - For Compliance with OSHA's Hazard Communication Standard, 29CFR 1910.1200)

## Section I - Product Identity:

Manufacturer's Name:  
Fiberlock Technologies, Inc.  
150 Dascomb Road  
Andover, MA 01810

**Fiberset FT® (6470,6475) Fiberset PM (7470,7475, 7480)**

Date of Preparation: September 15, 2002  
Information Telephone Number: (978) 623-9987  
Emergency Telephone Numbers  
Weekdays: (978) 623-9987  
After hours, weekends & holidays: (978) 887-5926, or  
"CHEM-TEL" Emergency Contact Number: (800) 255-3924

## Section II - Hazardous Ingredients/Identify Information

HAZARDOUS COMPONENT	COMMON NAME(S)	%	CAS. NO.	OSHA OR PEL	ACGIH TLV
Titanium dioxide	(same)	<2.0	13463-67-7		ACGIH TWA 10 mg/m <sup>3</sup>

## Section III - Physical/Chemical Characteristics [See reference note(s) No. 1, 2 on Reverse]

Boiling Points of Major Constituent: (Water)	212°F	Specific Gravity (H <sub>2</sub> O=1) Wgt./gal.	8.5
Vapor Pressure (mm Hg) @ 68°F	17	Melting Point Water (Ice)	32°F
Vapor Density (AIR=1) Heavier Lighter	X	Evaporation Rate (Butyl Acetate=1)	Slower
Solubility in Water	Total	Appearance: Odor:	liquid: slight odor Maximum VOC's 100 g/l (.09 lbs/gal)

## Section IV - Fire and Explosion Hazard Data (Nonflammable)

Flash Point: Noncombustible	Flammable Limits: LEL: N/A UEL: N/A	DOT Hazard Class: Not Regulated	Marking: "Keep From Freezing"
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## Section V - Reactivity Data

Hazardous Polymerization: Will not occur.  
Stability: Stable  
Incompatibility: Avoid Contact with: Strong oxidizing agents (e.g., nitric acid, permanganates), etc.  
Hazardous Decomposition Products: Some carbon monoxide.

## Section VI - Health Hazard Data, Toxicity Data

Route(s) of Entry: N/A  
Carcinogenicity?: No  
Health Hazards (Acute and Chronic): N/A

**EFFECTS OF OVEREXPOSURE:** Inhalation: Vapors or spray mists may be slightly irritating to eye, nose, throat, and mucous membranes of respiratory tract producing symptoms of headache, nausea in poorly ventilated areas. Skin Contact: Prolonged or repeated contact with coating may cause slight skin irritation. Eye Contact: Direct contact; inconsequential eye irritation.

**EMERGENCY AND FIRST AID PROCEDURES:** Inhalation: Remove to fresh air. Eye and Skin Contact: Immediately flush eyes with plenty of water for at least 15 minutes and consult physician; wash skin thoroughly with soap and water. If drenched, remove and wash clothing before reuse. Ingestion: If swallowed, call a physician immediately. If victim is conscious, give 2 glasses of water. Never give anything to an unconscious person. Treat symptomatically.

**TOXICITY INFORMATION:** The effects of overexposure shown in Section VI are based on acute toxicity profiles for a number of special emulsions that are compositionally similar to this product. Typical values are: Rat, oral LD 50: >5.0 g/kg; Rabbit, dermal LD 50: >5.0 g/kg; Rabbit, skin irritation: practically non irritating -72 hour Mean Irritation Score = 0 to 2; Rabbit, eye irritation: Inconsequentially irritating.

### SUPPLEMENTAL INFORMATION

To comply with New Jersey DOH Right-To-Know labeling law (N.J.A.C. 8:59 - 5.1 & 5.2)

**CAS. No.:**  
7732-18-5  
13463-67-7  
57-55-6  
Not Avail.\*  
Not Avail.\*  
\*Contents partially unknown

**CHEMICAL INGREDIENTS:**  
Water  
Titanium dioxide (#6470 & 7470 only)  
Propylene glycol  
Proprietary defoamer  
Acrylic resin solids

HMIS HAZARD RATING			
Health 1	Flammability 0	Physical Hazard 0	Personal Protection A
HAZARD INDEX: 0=Minimal, 1=Slight, 2=Moderate, 3=Serious, 4=Severe			
PERSONAL PROTECTION CODE			
A=Safety Glasses			

## **Section VII: Precautions for Safe Handling and Use**

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**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:** Keep unnecessary people away. Floor may be slippery; use care to avoid falling. Dike and contain material with inert material (e.g. sand, earth). Transfer liquid to containers for recovery or disposal and solid diking material to separate containers for disposal. Keep spills and runoff out of municipal sewers and open bodies of water.

**WASTE DISPOSAL METHOD:** The coating and any contaminated diking material should be thoroughly air dried and collected into drums. The drums should then be sealed and properly labeled with waste designation and landfill or incinerated according to current local, state and federal regulations.

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:** Maximum storage temperature 100°F. Keep closure tight and container upright to prevent leakage. Precautionary Labeling: "Keep from Freezing".

**OTHER PRECAUTIONS:** Do not get in eyes. Avoid skin contact. Prevent prolonged or repeated breathing of vapors or spray mists. Do not handle until the manufacturer's safety precautions and label instructions have been read and understood. Avoid breathing sanding dust.

## **Section VIII: Control Measures**

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**RESPIRATORY PROTECTION:** None required if good ventilation is maintained. Wear respirator (MSHA/NIOSH-approved or equivalent) suitable for concentrations and types of air contaminants encountered. Use approved chemical/mechanical filters designed to remove particulates in open and restricted ventilation areas. Use MSHA/NIOSH-approved airline type respirators or hood in confined areas.

**VENTILATION:** Sufficient ventilation, in pattern and volume, should be provided to keep the air contaminant concentration below applicable exposure limits. All application areas should be ventilated in accordance with OSHA regulation 29CFR Part 1910.94.

**PROTECTIVE GLOVES:** Impervious gloves should be worn if prolonged skin contact is likely. Use neoprene or rubber gloves to prevent prolonged skin contact.

**EYE PROTECTION:** Use safety eyewear including side shields, face shields, or chemical splash goggles (ANSI Z-87.1 or approved equivalent).

**OTHER PROTECTIVE EQUIPMENT:** Use disposable or impervious clothing if work clothing contamination is likely. Use protective cream if prolonged skin contact is likely.

**HYGIENIC PRACTICES:** Wash hands before eating, smoking, or using the washroom. Food or beverages should not be consumed anywhere this product is being applied.

## **References:**

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1. Sax, N.I., "Dangerous Properties of Industrial Materials", 8th ed., Van Nostrand Reinhold Company, Inc., NY, 1992.
2. American Conference of Governmental Industrial Hygienists, "TLV's and Biological Exposure Indices" for the current year (published annually).
3. U.S. Code of Federal Regulations (CFR) U.S. Dept. of Labor, No. 29, Parts 1900 to 1910.1200. OSHA Communications Standard 29 CFR 1910.1200.
4. Sax, N.I., R.J. "Hazardous Chemicals Desk Reference", Van Nostrand Reinhold Co., Inc., NY, 1987.
5. Fire Protection Guide to Hazardous Materials, 12th edition, National Fire Protection Association, Quincy, MA, 1997.
6. Title III List of Lists, U.S. Environmental Protection Agency publication EPA 560/4-90-011, January 1990.

**MATERIAL SAFETY DATA SHEET – Spray Rite 8 oz. Spray Adhesive**

GLT Products  
6810 Cochran Road  
Solon, OH 44139

Date Prepared: 06/05/06  
Emergency Phone: Chem-Tel 800/255-3924  
Information Phone: 440/914-1122

**Section 1 – Product Identification**

Name: Spray Rite 8 oz. Spray Adhesive

**Section 2 – Hazardous Ingredients**

Ingredient	CAS No.	OSHA PEL	TWA TLV	STEL	SARA 313	WT % (Optional)
Acetone	67-64-1	750	750	1000		20 – 30
Propane	74-98-6	1000	1000	Asphyxiant		20 - 30
Hexane	110-54-3	50	50		X	15 – 20
Isobutane	75-28-5	N/A	800	N/A		5 --15

**Section 3 – Health Hazard Information:**

Effects of Overexposure:

**Inhalation:** Can cause irritation to the nose and throat. High concentrations may cause headaches, dizziness, nausea and confusion.

**Eye:** May cause eye irritation.

**Skin:** May cause transient skin irritation.

**Ingestion:** May cause gastrointestinal irritation.

**Other:** Reports have associated prolonged and repeated occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

**Section 4 – First Aid Procedures**

**Swallowing:** If swallowed, do not induce vomiting. Call poison control center, hospital emergency room or physician immediately.

**Inhalation:** Remove to fresh air immediately. If breathing has stopped, give artificial respiration. Keep warm and quiet. Get medical attention.



**MATERIAL SAFETY DATA SHEET – Spray Rite 8 oz. Spray Adhesive**

**Eye:** Flush with large amounts of water, lifting upper and lower lids occasionally. Continue for at least 15 minutes. Get medical attention.

**Skin:** Remove contaminated clothing. Wash affected area with soap and water. Get medical attention if irritation persists.

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**Section 5 – Physical Data**

Boiling Point	-40°F to 160°F
Vapor Pressure PSIG @ 70°F	70 approx.
Vapor Density	2.5
Appearance and Odor:	Clear light amber solution
Specific Gravity:	0.6
Melting Point:	N/A
% Volatile:	80%

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**Section 6– Fire and Explosion Data**

Flash Point and Method: -40°F TCC	Flammable Limits: 1.8 LEL 12.0 UEL
Unusual Fire and Explosion Hazards:	Aerosol cans may rupture when heated.
Extinguishing Media:	Use water fog, dry chemical, foam or carbon dioxide.
Special Fire Fighting Procedures:	Heating of contents above 130°F may cause cans to burst.

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**Section 7 – Reactivity Data**

Stability:	Stable
Conditions to Avoid:	Storing in high temperatures or exposing to open flames.
Incompatibility (Conditions to avoid):	None
Hazardous Decomposition Products:	Carbon Monoxide and Carbon Dioxide.
Hazardous Polymerization:	None

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**Section 8 – Spill or Leak Information**

**MATERIAL SAFETY DATA SHEET – Spray Rite 8 oz. Spray Adhesive**

**Steps to be taken in case material is released or spilled:** Eliminate all sources of ignition. Permit only properly protected workers in the area with skin/eye protection and self contained breathing gear. Absorb small spills with inert absorbent material. Contact state, local, and federal agencies to ensure compliance with current regulations.

**Waste disposal method:** Waste must be disposed of according to local, state and federal regulations.

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**Section 9 – Personal Protection Information**

**Respirator Protection:** If the LTV's listed in Section 2 are exceeded, use a properly fitted NIOSH/MSHA approved respirator.

**Ventilation:** Local and mechanical ventilation are recommended to keep any hazardous ingredients listed in Section 2 below the lowest exposure limit.

**Hand Protection:** Resistant plastic or rubber recommended.

**Eye Protection:** Wear safety chemical splash goggles.

**Other Protective Equipment:** Not likely to be needed.

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**Section 10 – Special Precautions**

**Precautions To Be Taken In Handling and Storage:** Store cans in a cool, dry and well ventilated area away from all ignition sources. Prolonged exposure of cans to elevated temperatures may cause cans to rupture or burst.

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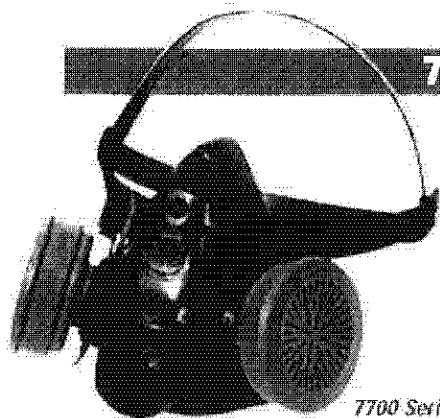
**Section 11 – Disclaimer**

The information presented in this MSDS represents the most accurate known presentation of this product. However, due to the many and diverse variables in its end use, it is the end users responsibility to determine the suitability of this information for the adoption of the safety precautions as may be necessary.

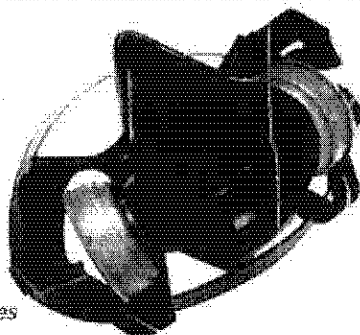
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# Half Masks

## 7700 AND 5500 SERIES HALF MASKS



7700 Series



The North 7700 half mask is the industry standard for comfort, fit and reliability. For over 25 years the North 7700 has proven itself, protecting workers in some of the harshest environments. Why settle for a copy, when you can have the original?

The North 5500 is the economical choice for the occasional user, contractors or as a "visitor's mask". The North 5500 has many of the same features as the 7700 mask, but made with an elastomeric material.

Cartridges and filters sold separately. Refer to pages 14 and 15 for a complete listing.

FEATURE	FUNCTION	BENEFIT
<b>GENERAL</b>		
Can be adapted to PAPR or Supplied Air	• Flexible for multiple work environments	• No need to inventory, train workers and fit test them on several respirators
Only 9 replacement parts – and all parts are replaceable	• Quick and easy to strip down and clean • Less inventory	• Cost savings in maintenance
Both the 7700 & 5500 are latex free	• No latex allergens	• Safe for your workers with allergies
Low "dead air" space	• Less exhaled breath is re-breathed	• Increased worker productivity
Strategic placement of exhalation valve	• More breath is exhaled out of the mask faster	• Workers feel cooler, more comfortable
<b>FACESEAL</b>		
Variable thickness in sealing area	• Nose area is flexible enough to conform to the bridge of the nose, but not too thin to collapse • Built up chin area supports the mask, maintains fit even while the wearer is talking • Sides are medium thickness to maintain a seal without pressure points	• Superior comfort without sacrificing fit
Wide, contoured sealing area	• Improved fit for more facial types	• More people will fit in a medium, so you have less inventory of alternate sizes
Overlapping sizes	• Fits a wider range of facial types	• Get the best fit possible for each of your workers
<b>HEAD STRAP</b>		
Expanded angle on cradle suspension is fixed into position	• More secure fit that will not slip • Workers can not wear it incorrectly	• Ideal for workers in active jobs • Less training on proper donning
Headstraps have dual elasticity Top straps have less stretch Bottom straps provide more stretch	• Holds the respirator in place • No constraints as worker turns head side to side	• More secure fit • More comfortable, will not pinch • Will not pull on the mask and jeopardize the seal
"Parking" feature	• Mask is still handy and at the ready when not worn	• Workers can get back to work quickly after a break
<b>MASK MATERIAL</b>		
7700 is 100% silicone – no fillers	• No chance of latex allergens • More durable, greater chemical resistance • More comfortable than other masks	• Worry free for you and your workers • Like new after other masks have quit • Increased user acceptance
5500 is elastomeric with a silicone blend	• Economical • Softer than other elastomeric masks • No chance of latex allergens	• Ideal for occasional use or for sub-contractors • More comfortable and better fit than other economy masks

# Half Masks



All North Half Masks can be adapted to PAPR or Supplied Air.

PART NO.	DESCRIPTION	PACKAGING
770030S, M, L	Silicone half mask. Sizes small, medium and large.	Each
550030S, M, L	Elastomeric half mask. Sizes small, medium and large.	Each

## 5500 CONVENIENCE PACKS



North has taken the most popular combinations of half mask, cartridges and filters and put them all together in one "convenient package" – the North 5500 Series Convenience Packs. Convenience Packs are ideal as a "visitor" respirator you can hand out to your sub-contractors, plant guests and other occasional users of respirators.

Not available in Canada

FEATURE	FUNCTION	BENEFIT
Half mask, cartridges and/or filters in one package	• Complete and convenient	• No worry that something is missing • You do not need to bundle your own respirator handout
All parts are replaceable Cartridges and filters are replaceable	• Priced as a disposable, but can be reused if you choose	• Flexibility for your worksite and sub-contractors.

Each respirator contains one mask, one set of cartridges and/or filters, and one set of filter holders if a prefilter is included. Refer to pages 14 and 15 for replacement cartridges and filters, and descriptions of these air-purifying elements (cartridges and filters).

PART NO.	DESCRIPTION	PACKAGING
<i>Common applications: Exposure to dust, mists and fumes, including asbestos and lead, and atmospheres that contain oil based aerosols.</i> 5580P100S, M, L	Half mask respirator complete with P100 filters. Sizes small, medium and large.	Each
<i>Common applications: Most paint and pesticide applications. Exposure to organic vapors such as MEK and isocyanates, plus particulates such as dusts, mists and fumes.</i> 5501R95S, M, L	Half mask respirator complete with organic vapor cartridges and N95 prefilters. Sizes small, medium and large.	Each
<i>Common applications: Exposure to organic vapors such as MEK and isocyanates. Will not protect against particulates such as dusts, mists and fumes.</i> 5501S, M, L	Half mask respirator complete with organic vapor cartridges. Sizes small, medium and large.	Each
<i>Common applications: Exposure to organic vapors such as MEK and isocyanates plus acid gases such as chlorine, sulfur dioxide, and hydrogen fluoride. Will not protect against particulates such as dusts, mists and fumes.</i> 5503S, M, L	Half mask respirator complete with organic vapor /acid gas cartridges. Sizes small, medium and large.	Each
<i>Common applications: Exposure to vapors and/or gases plus particulates such as dusts, mists and fumes including asbestos and lead, and atmospheres that contain oil based aerosols. The Defender™ also offers protection from formaldehyde.</i> 5581P100S, M, L	Half mask respirator complete with organic vapor cartridge/P100 filter. Sizes small, medium and large.	Each
5583P100S, M, L	Half mask respirator complete with organic vapor /acid gas cartridges/ P100 filters. Sizes small, medium and large.	Each
555CP100S, M, L	Half mask respirator complete with Defender™ multi-contaminant cartridges/P100 filters. Sizes small, medium and large.	Each

# Cartridges/Filters for Air-Purifying Respirators



North offers a complete line of cartridges and filters for the North 5500, 7700, 5400 and 7600 Series facepieces. All cartridges and filters listed below are interchangeable with any of these masks. Filters for Limited Use respirators, canisters for gas masks, and PAPR cartridges are listed in this catalog with those products.

## NORTH ESLIFE™ PROGRAM FOR CARTRIDGE CHANGE SCHEDULES

OSHA's Standard for Respiratory Protection, 29 CFR 1910.134, requires Employers to implement a change schedule for all vapor and gas cartridges when there isn't an end-of-service life indicator on the cartridge. This schedule must be site specific and take into consideration worksite humidity, worker breathing rate, as well as contaminant concentrations.

The North esLife Program is designed to help you with your cartridge change schedule, providing information on a cartridges life based on your worksite parameters. Visit the North web site [www.northsafety.com](http://www.northsafety.com) to learn more and try the North esLife Program.

PART NO.	DESCRIPTION	PROTECTION FROM	PACKAGING
<b>GAS AND VAPOR CARTRIDGES</b>			
75SC	Defender™ Multi-Purpose	Organic vapors, ammonia, methylamine, formaldehyde and acid gases (chlorine, hydrogen chloride, sulfur dioxide, hydrogen sulfide [escape], hydrogen fluoride and chlorine dioxide)	Pair
N75001	Organic Vapor	Organic vapors	Pair
N75002	Acid Gas Cartridge	Acid gases (chlorine, hydrogen chloride, sulfur dioxide, hydrogen sulfide [escape], hydrogen fluoride and chlorine dioxide) and formaldehyde.	Pair
N75003	Organic Vapor & Acid Gas	Organic vapors and acid gases (chlorine, hydrogen chloride, sulfur dioxide, hydrogen sulfide [escape], hydrogen fluoride and chlorine dioxide)	Pair
N75004	Ammonia & Methylamine	Ammonia and methylamine	Pair
N750052	Mercury Vapor Cartridge with ESLI	Mercury vapor and chlorine with End-of-Service Life Indicator (ESLI) for mercury	Pair
<b>COMBINATION GAS AND VAPOR CARTRIDGES WITH P100 PARTICULATE FILTERS</b>			
75SCP100	Defender™ Multi-Purpose with P100	Organic vapors, ammonia, methylamine, formaldehyde and acid gases (chlorine, hydrogen chloride, sulfur dioxide, hydrogen sulfide [escape], hydrogen fluoride and chlorine dioxide); and 99.97% filter efficiency for all particulates	Pair
7581P100	Organic Vapor with P100	Organic vapors; and 99.97% filter efficiency for all particulates	Pair
7582P100	Acid Gas with P100	Acid gases (chlorine, hydrogen chloride, sulfur dioxide, hydrogen sulfide [escape], hydrogen fluoride and chlorine dioxide) and formaldehyde; and 99.97% filter efficiency for all particulates	Pair
7583P100	Organic Vapor & Acid Gas with P100	Organic vapors and acid gases (chlorine, hydrogen chloride, sulfur dioxide, hydrogen sulfide [escape], hydrogen fluoride and chlorine dioxide); and 99.97% filter efficiency for all particulates	Pair
7584P100	Ammonia & Methylamine with P100	Ammonia and methylamine; and 99.97% filter efficiency for all particulates	Pair
75852P100	Mercury Vapor with ESLI and P100	Mercury vapor and chlorine with End-of-Service Life Indicator (ESLI) for mercury; and 99.97% filter efficiency for all particulates	Pair

# Cartridges/Filters for Air-Purifying Respirators



PART NO.	DESCRIPTION	PROTECTION FROM	PACKAGING
<b>PARTICULATE FILTERS</b>			
7580P100	P100	99.97% filter efficiency for all particulates	Pair
75FP100	Pancake. Low profile P100 filter for use under welding helmets	99.97% filter efficiency for all particulates	Pair
75FP100NL	Pancake with odor relief. Low profile P100 filter for use under welding helmets	99.97% filter efficiency for all particulates; plus relief from odors caused by nuisance levels of organic vapors, acid gases and ozone.	Pair
7506N95	N95 Prefilter	95% filter efficiency for non-oil based aerosol particulates	10 per Pack
7506R95	R95 Prefilter	95% filter efficiency for all particulates. Restricted to 8 hours service life if used in atmospheres containing oil-based aerosols	10 per Pack
7506N99	N99 Prefilter	99% filter efficiency for non-oil based aerosol particulates	10 per Pack
<b>PARTICULATE FILTER ASSEMBLIES</b>			
7535FP100	Stack Pack: Pancake with Adapter	99.97% filter efficiency for all particulates. Includes one pair of N750035 adapter to attach the Pancake to North cartridges. May not be used with the Defender cartridges.	5 Pair Filters & 1 Pair adapter
7531N95	N95 Filter Assembly	95% filter efficiency for non-oil based aerosol particulates. Includes 7506N95 prefilters, N750027 filter covers and N750015 filter retainers for use on half mask or full facepiece when cartridges are not used.	1 Pair
7531R95	R95 Filter Assembly	95% filter efficiency for all particulates. Restricted to 8 hours service life if used in atmospheres containing oil-based aerosols. Includes 7506R95 prefilters, N750027 filter covers and N750015 filter retainers for use on half mask or full facepiece when cartridges are not used.	1 Pair

## FILTER EFFICIENCIES

The National Institute of Occupational Safety and Health (NIOSH) classifies filters in two ways: type and efficiency. Using these classifications there are nine possible filter groups. The most commonly used are N95 as the most economical, and P100 providing the highest possible protection. The classifications are defined on the right.

### Type

- N** Not for use in atmospheres that contain oil based aerosols.
- R** Restricted to eight hours of service life if used in atmospheres that contain oil based aerosols.
- P** Oil Proof. May be used without restrictions in atmospheres that contain oil based aerosols.

### Efficiency

- 95** 95% minimum filter efficiency in removing particulates.
- 99** 99% minimum filter efficiency in removing particulates.
- 100** 99.97% minimum filter efficiency in removing particulates.

PART NO.	DESCRIPTION	PROTECTION FROM	PACKAGING
<b>ACCESSORIES</b>			
N750035	Pancake Adapter	Allows user to stack the Pancake on a North cartridge, converting the Pancake to a P100 prefilter. May not be used with the Defender.	Each
N750015	Filter Holder	Holds prefilters onto North half and full facepieces. Must be used with N750027 Filter cover.	Each
N750027	Seal Check / Filter Cover	Snaps on top of prefilters to hold them in place on North cartridges or on N750015 filter holder	Each
N750029	Shower Cap	For use with 7580P100. Deflects moisture during a "Decon" shower	Each

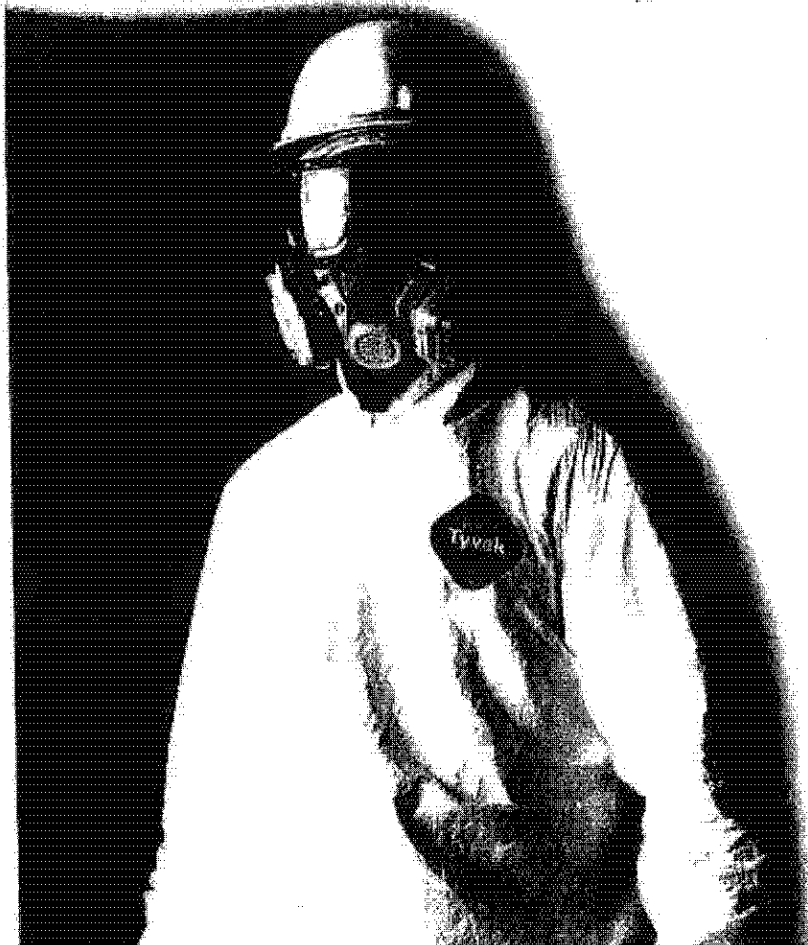
# DuPont™ Tyvek®

## The best balance of protection, durability and comfort

With Tyvek® you don't have to compromise. That's because Tyvek® delivers the best balance of protection, durability and comfort. Made using a proprietary manufacturing process, Tyvek® features an inherent barrier. So, unlike other protective apparel fabrics, which have either a film or coating that can be easily scratched or worn away, Tyvek® provides barrier through the entire fabric. As a result, your protection is not compromised unless the fabric has been completely torn—which isn't easy to do because of the strength and durability of Tyvek®. Make sure you're getting Tyvek®. Ask for it by name.

### Barrier Protection You Can Trust, Durability That Isn't Easily Compromised

- Tyvek® is the industry standard for dry particulate barriers. Microscopic particles as small as 0.5 microns can't pass through Tyvek®—even after it's been abraded.
- Tyvek® is an inherent barrier—not easily scratched or worn away.



### Comfort You'd Never Expect

Standing still, your body radiates heat and moisture vapor. So, it's no surprise that working in protective apparel that can't breathe escalates the problem dramatically and can affect productivity. It's called heat stress. And, it can seriously compromise your safety, especially in hazardous environments.

- Tyvek® lets air and moisture vapor pass through.
- Tyvek® is anti-static treated.
- Tyvek® breathes. Breathability is a key factor in reducing heat stress.
- Tyvek® is six times more breathable than microporous film garment materials.
- Tyvek® SoftWear™ is even more comfortable and four times as breathable as traditional Tyvek®.
- Tyvek® SoftWear™ has a dramatically softer feel.

### Proven Performance and Quality

At DuPont Personal Protection, our goal is to combine scientific innovation with material, garment and manufacturing knowledge to create protective apparel that helps the people who wear PPE perform at their best. Both DuPont manufacturing facilities are certified to ISO 9001:1994.

### Garment Styles To Meet Your Needs

- Tyvek® is available in a wide variety of garment styles, such as coveralls, labcoats, smocks and aprons.
- Tyvek® SoftWear™ is available in four coverall styles.

### Wide Range of Applications

- General Maintenance Operations
- Construction & Agricultural
- Lead & Asbestos Abatement
- Environmental Clean-up
- Modesty Garments (Hospitals & Police)
- Environments where cross contamination is an issue
- Spray Painting
- Food Processing
- Mold Remediation
- Abrasive Blasting
- Forensics



*The miracles of science*

# Tyvek® and Tyvek® SoftWear™

## Physical Properties

PROPERTY	UNITS	TYVEK®	TYVEK® SOFTWEAR™
Basis Weight	oz/yd <sup>2</sup>	1.2	1.2
Thickness	mil	5.0	6.0
Tongue Tear, MD	lbf	2.2	2.2
Tongue Tear, CD	lbf	2.3	2.2
Strip Tensile, MD	lbf	7.9	7.9
Strip Tensile, CD	lbf	8.7	8.1
Mullen Burst	psi	50	55
Porosity	l/m <sup>2</sup> /min/mm H <sub>2</sub> O	3.0	18.6
Static--Log R	log ohms	<9.8	<9.8
Flammability	16 CFR 1610	Class 1	Class 1

### INDEX OF CODES:

< - less than

These results are measured using the latest ASTM test methods. Results will vary due to the changes in test methods. A two test of performance is in use.

This information is based upon technical data that DuPont believes to be reliable. It is subject to revision as additional knowledge and experience are gained. DuPont makes no guarantee of results and assumes no obligation or liability in connection with this information.

It is the user's responsibility to determine the level of toxicity and the proper personal protective equipment needed. The information set forth herein reflects laboratory performance of fabrics, not complete garments, under controlled conditions. It is intended for information use by persons having technical skill for evaluation under their specific end use conditions, at their own discretion and risk.

Anyone intending to use this information should first verify that the garment selected is suitable for the intended use. In many cases, seams and closures have shorter breakthrough times and higher permeation rates than the fabric. Please contact the garment manufacturer for specific data. If fabric becomes torn, abraded or punctured, end user should discontinue use of garment to avoid potential exposure to chemical. **SINCE CONDITIONS OF USE ARE OUTSIDE OUR CONTROL, WE MAKE NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE AND ASSUME NO LIABILITY WHATSOEVER IN CONNECTION WITH ANY USE OF THIS INFORMATION.**

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#### WARNINGS:

- 1) Tyvek® is not flame-resistant and should not be used around heat, flame, sparks or in potentially flammable or explosive environments.
- 2) Garments made of Tyvek® should have slip-resistant or antislip materials on the outer surface of boots, shoe covers or other garment surfaces in conditions where slipping could occur.

### For more information:

Visit our website at:

[www.PersonalProtection.DuPont.com](http://www.PersonalProtection.DuPont.com)

### DuPont Personal Protection

**Fax-On-Demand Service at 1-800-558-9329**

DuPont manufactures a complete line of garments for personal protection.

For more information, call **1-800-931-3456**

# DuPont Personal Protection

 *The miracles of science®*





# Tychem®

CHEMICAL PROTECTIVE CLOTHING

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## Tychem® SL

### Lightweight protection of Tyvek® laminated with a chemical-resistant Saranex

Tychem® SL delivers effective protection against a range of chemical environments. Tychem® SL, utilizing Saranex® 23-P film laminated to Tyvek® brand protective material, is a lightweight, comfortable garment specifically designed for easy wear. Tychem® SL is ideal for chemical mixing, remediation, emergency medical response, paint spraying, and radioactive environments.

Tychem® SL is used in a variety of industries, including environmental clean-up operations, waste management, industrial plants, cleanroom applications, hazardous material response teams and other emergency services. General garment construction/wear guidelines should be followed according to the specific application.<sup>1</sup>

#### Visibility

When workers wear high-visibility colors it improves how well they can be recognized and distinguished from the background. Obviously, safety is enhanced when workers can be clearly see co-workers. The Tychem® SL standard white color provides the highest level of visibility in low and dim light; however, it may have low contrast. White garments provide high contrast visibility in wooded areas and low contrast against snow. In a laboratory study, Tychem® SL received high overall ratings for visibility for dim light and bright light. Contrast was low against bright, light colored backgrounds, but very high against dark and outdoor backgrounds.<sup>2</sup>

#### Durability

Tychem® SL is rugged and durable even in cold temperatures. Tychem® SL offers little change in stiffness when exposed to extreme cold temperatures (-65°C to 20°C or -85°F to 6 °F) measured per ASTM D747.

#### Permeation

Tychem® SL is the only fabric laminated with Saranex®. DuPont provides permeation data and technical support to help you choose the right Tychem® SL for your application. DuPont provides permeation data and detailed information on how Tychem® SL performs against chemical classes in a variety of forms. Choose Fax-On-Demand, website, CD-ROM or our eye printed Permeation Guide<sup>3</sup> for DuPont Tychem® Protec

#### Nuclear Environments

A study was conducted by Southwest Research Institute on fabrics' performance in potentially radioactive environments. The study of the fabrics' ability to resist water vapor and tritium gas penetration showed Tychem® SL was 150 times more resistant to tritium gas penetration than other fabrics. The study states, "When it is desired to work in a tritium environment, Tychem® SL is the only fabric that allows the wearer to work three hours, as opposed to only half an hour in other fabrics".

### Permeation Data for ASTM Recommended List of Chemicals for Evaluating Protective Clothing Materials (ASTM F1001)

CHEMICAL NAME	PHYSICAL PHASE	AVERAGE NORMALIZED BREAKTHROUGH TIME (minutes)	AVERAGE PERMEATION RATE (µg/cm <sup>2</sup> /minute)
Acetone	L	> 24	1.6
Acetonitrile	L	12	2.8
Ammonia	G	32	0.15
1,3-Butadiene	G	> 480	< 0.02
Carbon disulfide	L	immed.	>50
Chlorine gas	G	> 480	< 0.01
Dichloromethane	L	immed.	>50
Diethylamine	L	12	>50
N,N-	L	112	0.85

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Dimethylformamide			
Ethyl acetate	L	14	0.54
Ethylene oxide	G	immed.	8.4
n-Hexane	L	146	0.48
Hydrogen chloride	G	> 480	< 0.1
Methanol	L	>480	<0.001
Methyl chloride	G	> 480	< 0.006
Nitrobenzene	L	102	2.3
Sodium hydroxide, 50%	L	> 480	< 0.1
Sulfuric acid (conc.)	L	> 480	< 0.1
1,1,2,2- Tetrachloroethylene	L	immed.	5.7
Tetrahydrofuran	L	immed.	>50
Toluene	L	immed.	25

> = greater than  
< = less than  
L = liquid, G = gas  
Immed. = immediate  
(<10 minutes)

Numbers reported are averages of samples tested by ASTM F739 test method. Sample results do vary and therefore averages for these results are reported.

CHEMICAL NAME	PHYSICAL PHASE	CAS #	AVERAGE NORMALIZED BREAKTHROUGH TIME (minutes)	CHEMICAL NAME	PHYSICAL PHASE	CAS #	AVERAGE NORMALIZED BREAKTHROUGH TIME (minutes)
Acetone	L	64-19-7	>480	Methanol	L	67-56-1	>480
Acetic anhydride	L	108-24-7	>480	Methyl bromide	G	74-83-9	>480
Acrylic acid	L	79-10-7	>480	Methyl chloride	G	74-87-3	>480
Acrylonitrile	L	107-13-1	>480	Methyl ethyl ketoxime	L	96-29-7	>480
Ammonia	L	7664-41-7	>480	Methyl t-butyl ether	L	1634-04-4	>480
Ammonium hydroxide, 28%-30%	L	1336-21-6	>480	n-Methyl-2-pyrrolidone	L	872-50-4	>480
Benzene	L	71-43-2	74	4,4'-Methylene bis (o-chloroaniline), sat. sol. in methanol	L	101-14-4	>480
Benzo[a]pyrene	S	50-32-8	>480	Mineral oil	L	8012-95-1	>480
Black liquor	L	123465-36-1	>480	Mineral spirits	L	64475-85-0	>480
Chemideize 727 ND	L	mixture	>480	Nicotine	L	54-11-5	450
Chlorine, 20 ppm	G	7782-50-5	>480	Nitric acid, 70%	L	7697-37-2	>480
Chloroacetone	L	78-95-5	480	Nitrogen dioxide	G	10102-44-0	>480
Chromic acid, 60%	L	1333-82-0	>480	Oleum, 40% free SO <sub>3</sub>	L	8014-95-7	>480
o-Cresol	L	95-48-7	>480	PCB	I	11097-69-1	>480
Crude oil	L	8002-05-9	>480	PCB 1%, Mineral spirits 99%	L	11097-69-1	>480
1,1-Dichlorotetrafluoroethane	L	374-07-2	>480	PCB 50%, Mineral oil 50%	L	11097-69-1	>480
Diethylaniline crude	L	91-66-7	>480				
Diethyl-m-toluidine crude	L	91-67-8	>480				
Ethylene glycol	L	107-21-1	>480				
Formalin (Formaldehyde)	L	50-00-0	>480				

37%)					PCB 50%, Trichlorobenzene	L	11097- 69-1	>480
Formic acid	L	64-18-6	>480		50%			
Fuel oil	L	mixture	>480		PCB gas condensate	L	10097- 69-1	401
Gluteraldehyde, 5% aqueous solution	L	111-30- 8	>480		Phenol, 85%	L	108-95- 2	>480
Green liquor	L	68131- 30-6	>480		Phenyl ethyl alcohol	L	98-85-1	>480
Hexamethyldisilazane	L	999-97- 3	>480		Phosphoric acid, 85%	L	7665- 38-2	>480
Hydrazine	L	302-01- 2	>480		Potassium acetate, sat. sol. in water	L	127-08- 2	>480
Hydrochloric acid, 37%	L	7647- 01-0	>480		Sodium hydroxide, 50%	L	1310- 73-2	>480
Hydrofluoric acid, 48%	L	7664- 39-3	>480		Sodium hypochlorite, 17%	L	7681- 52-9	>480
Iodine	S	7553- 56-2	>480		Sodium hypochlorite, 5.25%	L	7681- 52-9	>480
Mercuric chloride, sat sol. in water	L	7487- 94-7	>480		Sulfur dioxide	G	7446- 09-5	>480
Mercury	L	7439- 97-6	>480		Sulfuric acid	L	7664- 93-9	>480
Methanesulfonic acid	L	75-75-2	>480		1,1,1,2- Tetrafluoroethane	L	811-97- 2	>480
					Toluene-2,4- dijisocyanate	L	584-84- 9	>480
					Triethylamine	L	121-44- 8	>480
					White liquor	L	68131- 33-9	>480

> = greater than, L = liquid, G = gas, S = solid

Physical Properties of Tychem® SL		Chemical Warfare Agents		
		AGENT	TIME	CUMULATIVE PERMEATION
Basis Weight (ASTM D3776-90)	3.6 oz/yd <sup>2</sup>	HD, Sulfur Mustard	3 hours	<0.1 µg/cm <sup>2</sup>
Thickness (ASTM D1777-75)	13 mils	L, Lewisite	6 hours	<0.1 µg/cm <sup>2</sup>
Mullen Burst (ASTM D3786-87)	73 psi	GB, Sarin	6 hours	<0.00012 µg/cm <sup>2</sup>
Breaking Strength Grab (md/cd) (ASTM D5034-90)	47/50 lbs	VX	12 hours	<0.00012 µg/cm <sup>2</sup>
Tearing Strength Trapeziod (md/cd) (ASTM D1117-80)	9/8 lbs			

Applied at 10g/m<sup>2</sup> in 1µL drops at 22°C, 50%  
< = less than

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For more information:

For specific permeation data and breakthrough times for other chemicals:

DuPont Protective Apparel

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It is the user's responsibility to determine the level of toxicity and the proper personal protective equipment needed. The information set forth herein

**Fax-On-Demand Service**  
at 1-800-558-5907

Visit our website at:  
[www.TyvekProtectiveApprl.com](http://www.TyvekProtectiveApprl.com)

DuPont manufactures a complete line of chemical protective fabrics made of Tychem® and fabric made of Tyvek® for dry particulate protection. For more information, call 1-877-797-5907.

**WARNINGS:**

1) Tychem® BR is not flame-resistant and should not be used around heat, flame, sparks, or potentially flammable or explosive environments.

2) Garments made of Tychem® BR should have slip-resistant or antislip materials on the outer surface of boots, shoe covers or other garment surfaces in conditions where slipping could occur.

reflects laboratory performance of fabrics, not complete garments, under controlled conditions. It is intended for information use by persons having technical skill for evaluation under their specific end-use conditions, at their own discretion and risk.

Anyone intending to use this information should first verify that the garment selected is suitable for the intended use. In many cases, seams and closures have shorter breakthrough times and higher permeation rates than the fabric. Please contact the garment manufacturer for specific data. If fabric becomes torn, abraded or punctured, end-user should discontinue use of garment to avoid potential exposure to chemical. Since conditions of use are outside our control, we make no warranties, expressed or implied, including, without limitation, no warranties of merchantability or fitness for a particular use and assume no liability whatsoever in connection with any use of this information.

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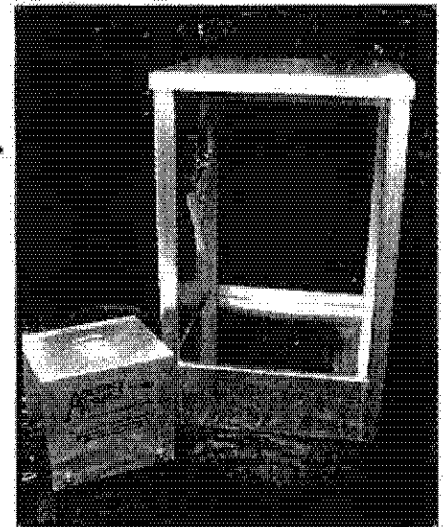
## Water Filtration

### Portable Shower #9105

The ORIGINAL COLLAPSIBLE telescoping decontamination shower is easily set up by two men in a matter of seconds.

**Features:**

- \* MADE IN U.S.A.
  - \* Lightweight aluminum construction
  - \* 100 Micron drain filter
  - \* Removable curtain
  - \* Two (2) Handles for E-Z Handling
- Dimensions: (Open) 31" X 30" X 83"  
Dimensions: (Closed) 31" X 31" X 48"  
Weight: 100 lbs.



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#9115 Two Stage Pump and #9105 Collapsed Shower

### Two Stage Pump #9115

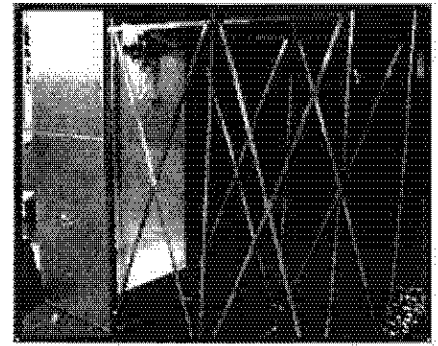
**Features:**

- \* MADE IN U.S.A.
- \* Enclosed aluminum container
- \* Galvanized plumbing
- \* 5 Micron and 50 Micron filtration
- \* 12 Gallons per minute
- \* Weight: 36 lbs.
- \* 1/2 H.P. Motor

[CLICK HERE FOR THE PARTS LIST](#)

### Entry/Exit Frame Model #9103

Decontamination frames are 32" wide which can be used to form "tunnels" from one contaminated area to another. They can also form a passageway from a decontamination trailer to a work area, or can be used with the Aero-Porta Shower for airlock chambers.



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