Technical Data Package

Interceptor® Ensembles • (with overcovers)

Compliant with Base Requirements, Liquefied Gas & Optional Flash Fire Protection Requirements of NFPA 1991, 2005 Edition

Consult Lakeland's User Manual for Instructions on Use

Lakeland

www.lakeland.com

RM- 4699 Revision A

Interceptor® Encapsulated Suit Styles 80645, 80645W, 80655, 80655W, 81645, 81645W, 81655, 81655W, 82645, 82645W, 82655, 82655W, 82645G, 82645WG, 82655G, 82655WG

Accessories and Certified pass thru options are listed in this document.

NFPA 1991 Compliant Interceptor Ensembles (w/overcovers) are available in the following sizes XS, SM, MD, LG, XL, 2X, 3X, 4X. The Lakeland User Manual contains a sizing chart for encapsulating garments.

The chemical barrier inner garment of the NFPA 1991 Compliant Interceptor ensembles are made from a chemical barrier fabric which is a proprietary multi-layer chemical barrier film. The chemical garment seams are sewn with a single needle stitch with cotton/polyester thread. The seams are sealed inside and outside with hot-air welded chemical barrier tape.

The overcover is made from an 11 oz aluminized fiberglass fabric obtained from Gentex and sewn with thread made of Nomex fibers. The face-shield in the overcover is a 10 Teflon lens. This lens system is sewn in with Nomex thread. The overcover is attached to the chemical suit at each value cover by means of hook and look Velcro.

The chemical suit visor system consists of a 10 mil Teflon lens outer and a 40 mil PVC lens inner. The edge of the visor is sealed inside and out with the same tape used on the garment seams.

The glove configuration consists of the saint Globain One Glove System. Certified to NFPA 1991, 2005 Edition.

These gloves have no surface treatments. The glove system is connected to the sleeve of the inner chemical barrier garment with a rigid plastic ring and metal ring clamp. The seal is accomplished by mechanical compression of the garment and glove materials.

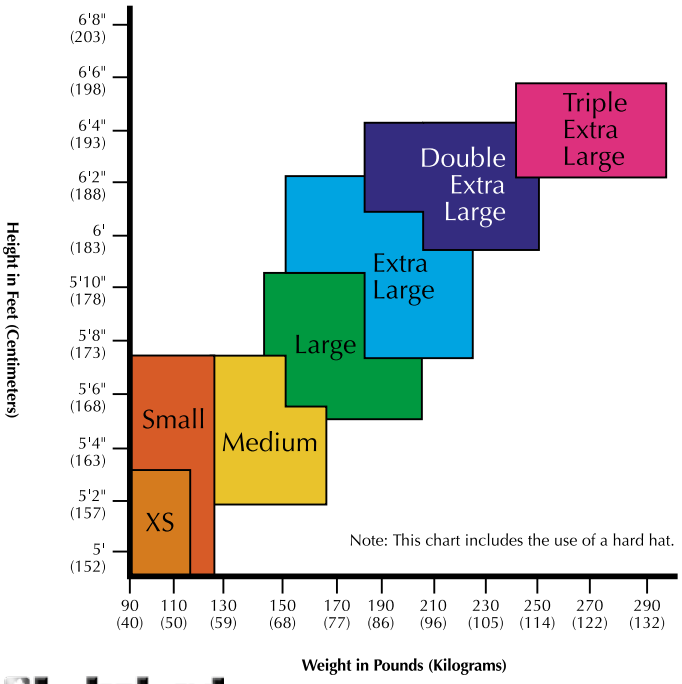
The ensembles were certified with Onguard® HazMax™ 87012 boots worn over attached socks and under a boot top cover. The boots are not physically attached to the inner garment or to the overcover. The attached socks boots and boot flaps are made from chemical suit material. The Onguard boots provide the physical protection. The sock boots provide the chemical protection. These Onguard boots have an absorbent polyster lining, steel toes and ladder shanks. There are no surface treatments applied to the boots. These boots are available in sizes 6 to 15.

The 48 inch long, vapor-protective closure has nickel-silver teeth. The slider components are aluminum-bronze. The closure is mounted on a PVC tape that is sewn to outside of the chemical barrier garment and sealed with hot-air welded tape on both sides. The closures are covered by two flaps made from the suit material. The flaps are fastened with hook and loop closures.

The garment is equipped with three Lakeland exhaust valves. The valve is manufactured of an impact resistant plastic body and a removable splash shield. The diaphragm is made of molded butyl rubber. The valves are inserted through the chemical suit material and secured with a threaded inner ring, sealed with compression. The valve assemblies are covered with a flap of primary suit material to reduce direct splash on the exhaust valve assembly. The exhaust valves can be replaced by Lakeland.

See Lakeland User manual on inspection of the valve system in Lakeland's suits.

Recommended Sizing Chart for Total Encapsulated Suits



Encapsulated Suit fit varies with individual body shape and under clothing. Test garment for proper fit before use, as garment performance depends on selecting the appropriate size.

If you have any questions, please contact Lakeland Customer Service...

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Lakeland

Interceptor® Encapsulated Suit Components and Compliance

Section	NFPA 1991, 2005 Edition Requirement	Compliance
6.1.1	Vapor-protective ensembles shall be designed and configured to protect the wear's torso, head, arms, legs, hands, and feet, and shall completely enclose the wearer.	Yes
6.1.2	Vapor-protective ensembles shall consist of a suit with hood, gloves, and footwear.	Yes
6.1.2.1	The suit hood shall be provided with a visor that is designed to allow the wearer to see outside the chemical protective ensemble.	Yes
6.1.2.2	The visor shall be constructed of a transparent material that qualifies as a chemical protective layer.	Yes
6.1.2.3	Vapor-protective ensembles shall be permitted to be constructed using an outer garment designed to be worn over the glove ensemble element where such additional gloves are necessary to meet the glove ensemble element	Yes
6.1.2.4	Vapor-protective ensembles shall be permitted to be constructed using an outer glove designed to be worn over the glove ensemble element such additional gloves are necessary to meet the glove ensemble element requirements of this standard.	Yes
6.1.2.5	Vapor-protective ensembles shall be constructed using an outer boot designed to be worn over a footwear ensemble or bootie where such additional boots are necessary to meet the footwear ensemble element requirements of this standard.	Yes
6.1.3	Other than outer gloves and outer boots, vapor-protective ensembles shall be designed so that all separate components are securely attached and provided as a single and integrated unit.	Yes
6.1.4	Vapor-protective ensembles shall be offered in at least four unique and different sizes.	Yes
6.1.5	Vapor-protective ensembles shall be equipped with an exhaust valve(s).	Yes
6.1.5.1	The exhaust valve(s) shall be one-way valve(s).	Yes
6.1.5.2	The one-way valves shall be designed to release exhaust air from inside of the vapor-protective ensemble to the outside environment through the exhaust valve, and shall prevent entry of contaminated air into the vapor-protective ensemble from the outside environment through the exhaust valve.	Yes
6.1.6	The mounting mechanism of exhaust valves shall be designed to allow their removal and reinstallation or replacement, for inspection, from the vapor-protective ensemble.	Yes
6.1.7	The vapor-protective ensemble suit with hood and visor, glove and footwear shall be constructed using primary material that shall provide the protection from chemical and physical hazards. The primary material shall include the chemical–protective layer that can be configured as a separate layer or as a composite.	Yes
6.1.8	The chemical-protective layer shall be designed to provide permeation resistance to chemicals and gastight integrity for the vapor-protective ensemble.	Yes
6.1.8.1	The chemical-protective layer shall be considered as primary material and shall be permitted to be configured as a separate layer or as a composite with other primary materials.	Yes
6.1.8.2	The chemical-protective layer shall be permitted to depend on the other primary material to provide the physical protection.	Yes
6.1.9	Protective covers or pockets constructed using the suit primary material shall be provided to protect the exhaust valves from direct chemical splashes to the seat of the exhaust valve(s). The pockets or covers shall allow access to the valves for removal and inspection.	Yes
6.1.10	All external hardware and fittings shall be free of rough spots, burrs, or sharp edges that could tear materials.	Yes
6.2.1	Glove elements shall be designed and configured to protect the wearer's hands and wrists.	Yes
6.2.2	Glove elements shall provide protection from the finger tips to at least 25 mm (1 in.) beyond the wrist crease.	Yes
6.2.3	Glove elements shall be constructed using primary material that shall provide the protection from chemical and physical hazards. The primary material shall include the chemical-protective layer that can be configured as a separate layer or as a composite.	Yes
6.2.4	The glove chemical-protective layer shall be designed to provide permeation resistance to chemicals and gastight integrity for the vapor-protective glove.	Yes
6.2.4.1	The glove chemical-protective layer shall be considered as primary material and shall be permitted to be configured as a separate layer or as a composite with other primary materials.	Yes
6.2.4.2	The glove chemical-protective layer shall be permitted to depend on the other primary material to provide the physical protection.	Yes
6.2.5	Glove elements shall be permitted to be constructed using an outer glove designed to be worn over the primary glove where such additional gloves are necessary to meet the glove requirements of this standard.	Yes

Section	NFPA 1991, 2005 Edition Requirement	Compliance
6.2.6	The interface of vapor-protective glove to vapor-protective suit sleeve interface shall be designed to permit removal and replacement of the gloves attached to each suit sleeve within 30 minutes.	Yes
6.2.7	All external hardware and fittings shall be free of rough spots, burrs, or sharp edges that could tear materials.	Yes
6.3.1	Footwear elements shall be designed and configured to provide protection to the feet and ankles.	Yes
6.3.2	Vapor-protective footwear shall provide protection for an area of not less than 200 mm (8 in.) in height when measured from the plane of the sole bottom.	Yes
6.3.3	Booties, where provided, shall be designed as an extension of the chemical protective suit leg, shall cover the entire foot and ankle, and shall provide protection to the feet when worn in conjunction with an outer boot.	Yes
6.3.4	Footwear elements shall be constructed using primary material that shall provide the protection from chemical and physical hazards. The primary material shall include the chemical-protective layer that can be configured as a separate layer or as a composite.	Yes
6.3.5	The footwear chemical-protective layer shall be designed to provide permeation resistance to chemicals and gastight integrity for the vapor-protective footwear.	Yes
6.3.5.1	The footwear chemical-protective layer shall be considered as primary material and shall be permitted to be configured as a separate layer or as a composite with other primary materials.	Yes
6.3.5.2	The footwear chemical-protective layer shall be permitted to depend on the other primary material to provide the physical protection.	Yes
6.3.6	Footwear elements shall be permitted to be constructed using an outer boot designed to be worn over the primary footwear or bootie where such additional boots are necessary to meet the footwear requirements of this standard.	Yes
6.3.7	All external hardware and fittings shall be free of rough spots, burrs, or sharp edges that could tear materials.	Yes
6.3.8	Metal parts shall not penetrate from the outside into the lining or sole at any points.	Yes
6.3.9	No metal parts, including but not limited to nails, or screws, shall be present or utilized in the construction or attachment of the sole (with heel) to the puncture resistant device, insole, or upper.	Yes
7.1.1	Ensembles shall be tested for liquid integrity and shall allow no liquid penetration, no collection of liquid inside outer gloves (if present), and no collection of liquid inside outer boots (if present).	Yes
7.1.2	• Ensembles shall be tested for overall function and integrity and shall have an ending pressure of at least 80 mm (3 5/32 in.) water gauge pressure. • Ensembles shall be tested for overall function and integrity and shall permit the test subject to complete all tasks while wearing head protection. • Ensembles shall be tested for overall function and integrity and shall permit the test subject to see through the visor with a visual acuity of 20/35 or better. • Ensembles shall be tested for overall function and integrity and shall permit the test subject to remove and insert their hand into the glove system.	Yes
7.1.3	Ensembles shall be tested for 500 l/min airflow capacity and shall exhibit no internal pressures greater than 100 mm (4 in.) water gauge pressure, and shall show an ending pressure of at least 80 mm (3 5/32 in.) water gauge pressure after subsequent testing for gastight integrity.	Yes
7.1.4	Ensembles with external fittings that penetrate any primary materials shall be tested for gastight integrity and show an ending pressure of at least 80 mm (3 5/32 in.) water gauge.	Yes
7.1.5	Exhaust valves installed in vapor-protective suits shall have a mounting strength greater than 135 N (30 lbf).	Yes
7.1.6	The glove chemical-protective layer shall be permitted to depend on the other primary material to provide the physical protection.	Yes
7.1.7	Glove elements shall be permitted to be constructed using an outer glove designed to be worn over the primary glove where such additional gloves are necessary to meet the glove requirements of this standard.	Yes
7.2.1	Suit materials shall be tested for permeation resistance after flexing and abrading and shall not exhibit a breakthrough detection time of 1 hour or less for the chemicals in List A.	Yes
7.2.1.1	Suit materials shall be tested for permeation resistance after flexing and abrading and shall not exhibit a breakthrough detection time of 1 hour of less for each additional chemical or specific chemical mixture for which the manufacturer is certifying the ensemble.	Yes
7.2.2	Suit materials shall be tested for resistance to flame impingement and shall not ignite during the initial 3 second exposure period, shall not burn a distance of greater than 100 mm (4 in.), shall not sustain burning for more than 10 seconds, and shall not melt as evidenced by flowing or dripping during the subsequent 12-second exposure period.	Yes

Section	NFPA 1991, 2005 Edition Requirement	Compliance
7.2.3	Suit material shall be tested for bursting strength and shall have a bursting strength of not less than 200 N (45 lb force).	Yes
7.2.4	Suit materials shall be tested for puncture propagation tear resistance and shall have a puncture propagation tear resistance of not less than 49 N (11 lbf).	Yes
7.2.5	Suit materials shall be tested for cold weather performance and shall not have a bending moment greater than 0.057 N m (0.5 in.-lbf) at a angular deflection of 60 degrees and -25°C (-13°F).	Yes
7.2.6	Suit seams shall be tested for permeation resistance and shall not exhibit a breakthrough detection time of 1 hour or less for the chemicals in List A.	Yes
7.2.6.1	Suit seams shall be tested for permeation resistance and shall not exhibit a breakthrough detection time of 1 hour or less for each additional chemical or specific chemical mixture for which the manufacturer is certifying the ensemble.	Yes
7.2.7	Suit seams shall be tested for seam strength and shall have a breaking strength of not less than 2.88 kN/m (30 lbf/2 in.).	Yes
7.2.8	Suit closure assemblies shall show no penetration by the liquid chemical in List A.	Yes
7.2.8.1	Suit closure assemblies shall be tested for chemical penetration resistance and shall show no penetration for any additional chemicals or specific chemical mixtures for which the manufacturer is certifying the suit.	Yes
7.2.9	Suit closure assemblies shall be tested for closure strength and shall have a breaking strength of not less than 2.88 kN/m (30 lbf/2 in.).	Yes
7.3.1	Visor materials shall be tested for permeation resistance and shall not exhibit breakthrough detection time of 1 hour or less for the chemicals in List A.	Yes
7.3.1.1	Visor materials shall be tested for permeation resistance and shall not exhibit breakthrough detection time of 1 hour or less and shall not exhibit a breakthrough detection time of 1 hour or less for each additional chemical or specific chemical mixture for which the manufacturer is certifying the ensemble.	Yes
7.3.2	Visor materials shall be tested for resistance to flame impingement and shall not ignite during the initial 3-second exposure period, and shall not burn a distance of greater than 100 mm (4 in.), shall not sustain burning for more than 10 seconds, and shall not melt as evidenced by flowing or dripping during the subsequent 12-second exposure period	Yes
7.3.3	Visor materials shall be tested for bursting strength and shall have a bursting strength of not less than 200 N (45 lbf).	Yes
7.3.4	Visor materials shall be tested for puncture propagation tear resistance and shall have a puncture propagation tear resistance of not less than 5 kg (11 lb).	Yes
7.3.5	Visor materials shall be tested for cold temperature bending and shall not crack or show evidence of visible damage.	Yes
7.3.6	Visor material seams shall be tested for permeation resistance and shall not exhibit a normalized breakthrough detection time of 1 hour or less for the chemicals in List A.	Yes
7.3.6.1	Visor material seams shall be tested for permeation resistance and shall not exhibit a normalized breakthrough detection time of 1 hour or less and shall not exhibit a breakthrough detection time of 1 hour or less for each additional chemical or specific chemical mixture for which the manufacturer is certifying the ensemble.	Yes
7.3.7	Visor material seams shall be tested for seam strength and shall have a breaking strength of not less than 134 N/50 mm (30 lbf/2 in.).	Yes
7.4.1	Glove materials shall be tested for permeation resistance after flexing and abrading and shall not exhibit a breakthrough detection time of 1 hour or less for the chemicals in List A.	Yes
7.4.1.1	Glove materials shall be tested for permeation resistance after flexing and abrading and shall not exhibit a breakthrough detection time of 1 hour or less and shall not exhibit a breakthrough detection time of 1 hour or less for each additional chemical or specific chemical mixture for which the manufacturer is certifying the ensemble.	Yes
7.4.2	Glove materials shall be tested for resistance to flame impingement and shall not ignite during the initial 3-second exposure period, and shall not burn a distance of greater than 100 mm (4 in.), shall not sustain burning for more than 10 seconds, and shall not melt as evidenced by flowing or dripping during the subsequent 12-second exposure period.	Yes
7.4.3	Glove materials shall be tested for cut resistance and shall have a cut distance of more than 25 mm (1 in.).	Yes
7.4.4	Glove materials shall be tested for puncture resistance and shall have a puncture resistance of not less than 2.3 kg (5 lb).	Yes
7.4.5	Glove materials shall be tested for cold weather performance and shall have a bending moment of 0.057 N m (0.5 in.-lbf) at an angular deflection of 60 degrees and -25°C (-13°F).	Yes

Section	NFPA 1991, 2005 Edition Requirement	Compliance
7.4.6	Gloves shall be tested for dexterity and shall have an average percent increase of barehanded control of less than 600 percent.	Yes
7.5.1	Footwear upper materials shall be tested for permeation resistance after flexing and abrading and shall not exhibit a breakthrough detection time of 1 hour or less for the chemicals in List A.	Yes
7.5.1.1	Footwear upper materials shall be tested for permeation resistance after flexing and abrading and shall not exhibit a breakthrough detection time of 1 hour or less and shall not exhibit a breakthrough detection time of 1 hour or less for each additional chemical or specific chemical mixture for which the manufacturer is certifying the ensemble.	Yes
7.5.2	Footwear upper materials shall be tested for resistance to flame impingement and shall not ignite during the initial 3-second exposure period, and shall not burn a distance of greater than 100 mm (4 in.), shall not sustain burning for more than 10 seconds, and shall not melt as evidenced by flowing or dripping during the subsequent 12-second exposure period.	Yes
7.5.3	Footwear upper materials shall be tested for cut resistance and have a cut distance of more than 25 mm (1 in.)	Yes
7.5.4	Footwear upper materials shall be tested for puncture resistance and have a puncture resistance of not less than 3.6 kg (8 lb).	Yes
7.5.5	Footwear toes shall be tested for impact and compression resistance and shall have an impact resistance of not less than 101.7 J (75 ft-lb) and a compression resistance of not less than 11,121 N (2500 lbf).	Yes
7.5.6	Footwear soles and heels shall be tested for puncture resistance and shall have a puncture resistance of not less than 1210 N (272 lb).	Yes
7.5.7	Footwear soles and heels shall be tested for abrasion resistance and have an abrasion resistance rating of not less than 65	Yes
7.5.8	Footwear soles or ladder shanks shall be tested for bending resistance and shall not deflect more than 6 mm (1/4 in.)	Yes
7.5.9	Footwear soles shall be tested for slip resistance and shall have a static coefficient of 0.75 or greater.	Yes
7.6.1	Primary suit, glove and footwear element materials and seams shall be tested for permeation resistance after flexing and abrading and shall not exhibit a breakthrough detection time of 1 hour or less for the chemicals in List B.	Yes
7.6.2	Primary suit, glove, and footwear materials (after flexing and abrading) and seams shall be tested for permeation resistance for 60 minutes at 32° C and at a contamination density of 100 g/m2; and shall not exceed a cumulative permeation of 1.25 µg for sarin (GB, or isopropyl methyl phosphonofluoridate).	Yes
7.6.3	Primary suit, glove, and footwear materials (after flexing and abrasion) and seams shall be tested for permeation resistance for 60 minutes at 32°C and a contamination density of 100 g/m2; and shall not exceed a cumulative permeation of 4 µg for sulfur mustard and lewisite.	Yes
7.6.4	Ensembles shall be tested for inward leakage and shall have no inward leakage greater than 0.02 percent.	Yes
7.7.1	Vapor-protective Ensembles, ensemble elements that will be certified as compliant with the additional criteria for liquefied gas protection shall also meet all applicable requirements in Section 7.1 through Section 7.5.	Yes
7.7.2	Primary suit, glove, and footwear materials shall be tested for liquefied gas permeation resistance and shall not exhibit a normalized breakthrough detection time of 15 minutes or less for gases in List C cooled to a liquid state.	Yes
7.8.1	Vapor-protective ensembles, ensemble elements that will be certified as compliant with the additional criteria for chemical flash fire protection for escape only shall also meet all applicable requirements in Section 7.1 through Section 7.5.	Yes
7.8.2	Ensembles, ensemble elements, and individual elements shall be tested for overall ensemble flash protection shall not have any afterflame times of longer than 2 seconds, shall show an ending pressure of at least 13 mm (1/2 in.) water gauge in the subsequent gastight integrity testing, and shall permit visual acuity through the visor of 20/100 or better.	Yes
7.8.3	Primary suit, glove, and footwear materials shall be tested for thermal protective performance (TPP) and shall have an average TPP rating of not less than 12.	Yes
7-6.4	Primary suit, glove, and footwear materials shall be tested for resistance to flame impingement and shall not ignite during the initial 3-second exposure period, shall not burn a distance of greater than 100 mm (4 in.), shall not sustain burning for more than 2 seconds, and shall not melt as evidenced by flowing or dripping during the subsequent 12-second exposure period.	Yes
7-6.5	Suit and glove materials shall be tested for the rate of static electric discharge and shall show no voltage greater than 350 V at 5 seconds after termination of charge generation.	Yes

Interceptor® Chemicals

List A	List B	List C
Acetone	Cyanogen Chloride Gas	Ammonia Gas
Acetonitrile	Carbonyl Chloride Gas	Chlorine Gas
Anhydrous Ammonia Gas	Dimethyl Sulfate	Ethylene Oxide
1,3-Butadiene Gas	Hydrogen Cyanide	
Carbon Disulfide		
Chlorine Gas		
Dichloromethane		
Diethylamine		
Dimethylformamide		
Ethyl Acetate		
Ethylene Oxide Gas		
Hexane		
Hydrogen Chloride Gas		
Methanol		
Methyl Chloride Gas		
Nitrobenzene		
Sodium Hydroxide, 50%		
Sulfuric Acid, 98.1%		
Tetrachloroethylene		
Tetrahydrofuran		
Toluene		

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