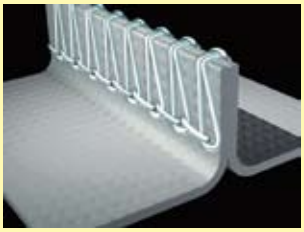
Chemical Protective Clothing

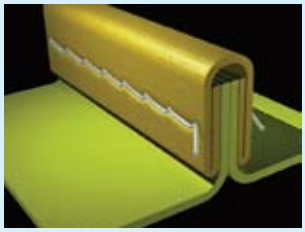


Lakeland® INDUSTRIES, INC

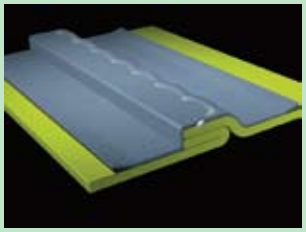
Lakeland's Limited Use and Chemical Protective Apparel are available with these Seams:



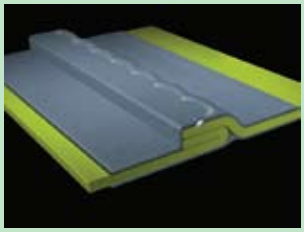
Serged Seams
A serged seam joins two pieces of material with a thread that interlocks. This is an economical stitching method for general applications. This stitching method is generally not used for chemical protective clothing. It is more commonly found on limited use clothing where dry particles are of a concern.



Sewn and Bound Seams
A sewn and bound seam joins two pieces of material with an overlay of similar material and is chain stitched through all of the layers for a clean finished edge. This provides increased holdout of liquids and dry particulates.



Heat Sealed Seams
A heat sealed seam is sewn and then sealed with a heat activated tape. This method provides liquid proof seams, and is especially useful for Level A and B chemical protective clothing.



Heat Sealed Seams Plus
This is the strongest seam that Lakeland offers. The seam is sewn and then heat sealed on the outside and inside to offer the highest strength and chemical resistance.

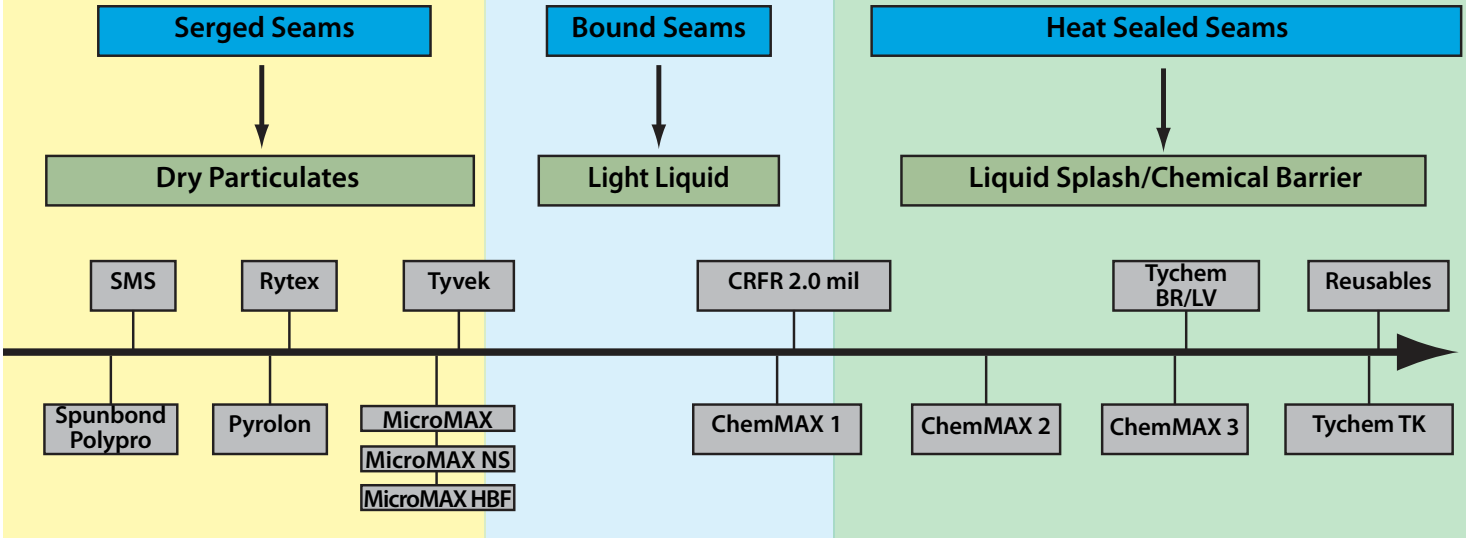


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Lakeland® INDUSTRIES, INC

Pyrolon® CRFR

Pyrolon® CRFR protective wear...They're unique. They're disposable. They're chemical resistant. And they're flame retardant, meeting NFPA 2113 requirements. Imagine, all these qualities in one protective garment. Only from Lakeland.

Pyrolon® CRFR garments bar contaminating flammables like paint, oil and grease, hazardous liquids, and dry particulates from penetrating to inner clothing.

Pyrolon® CRFR features:

- Light chemical splash protection
- Self extinguishing
- Won't melt or drip
- Meets NFPA 2113 requirements
- Designed to be worn over woven thermally protective coveralls, such as woven Nomex®, for environments where flash fire is a concern.



Chemical	Thickness (mils)	Time to Penetrate
Acetone	12	>60
Acetonitrile	12	>60
Acetonitrile	12	>60
Benzene	12	>60
Carbon Disulfide	12	>60
Dichloromethane	13	>60
Diethylamine	12	>60
Dimethylformamide	12	>60
Ethyl Acetate	12	>60
Hexane	13	>60
Hexamethylene Diisocyanate	12	>60
Hydrochloric Acid	12	>60
Methanol	12	>60
Methyl Isobutyl Ketone	12	>60
Monochlorobenzene	12	>60
Nitrobenzene	12	>60
n-Butyl Acetate	12	>60
Orthodichlorobenzene, Grade F	12	>60
Para-Dichlorobenzene	12	>60
Sodium Hydroxide	13	>60
Sulfuric Acid	13	>60
Tetrachlorethylene	13	>60
Tetrahydrofuran	13	>60
Toluene	12	>60
Trichlorobenzene Mixture	12	>60
Xylene	12	>60

Pyrolon CRFR Physical Properties

Physical Property	Units	Specification
Basis Weight	(oz./sq.yd.)	4.33
Grab Tensile	MD (lbs. / kg.) XD (lbs. / kg.)	37.1/ 16.82 30.7/ 13.92
Trap Tear	MD (lbs. / kg.) XD (lbs. / kg.)	9.0 / 4.08 11.9 / 5.39
Mullen Burst	(lb./sq.in.)	45
Char Length	MD (inches / cm) XD (inches / cm)	5.0 in 4.8 in
Afterflame	(seconds)	<2
Thermal Protective Performance (TPP)	(cal./cm^2)	4.47
Surface Resistance	EN1149-1:2006	Pass

Note: *Chemical Resistance Data is in accordance with ASTM F-903 test method. Testing is performed on fabric samples only, not finished garments. Sources for all test data are independent laboratory conditions and not actual use conditions.*



51100
Coverall, collar, open wrists and ankles hemmed cuff.
Sizes: S - 5XL
Case Pack: 6
Case Weight: 6 lbs



51110
Coverall, collar, elastic wrists and ankles.
Sizes: S - 5XL
Case Pack: 6
Case Weight: 6 lbs



51120
Coverall, hood, elastic face, open wrists and ankes, hemmed cuffs.
Sizes: S - 5XL
Case Pack: 6
Case Weight: 6 lbs



51130
Coverall, hood, elastic face, wrists, and ankles.
Sizes: S - 5XL
Case Pack: 6
Case Weight: 6 lbs



51150
Coverall, hood**,** elastic face and wrists and attached boots.
Sizes: S - 5XL
Case Pack: 6
Case Weight: 6 lbs



51155
Coverall, expanded back for SCBA, hood, elastic face, wrists, over boots.
Sizes: S - 5XL
Case Pack: 6
Case Weight: 6 lbs

Pyrolom® CRFR Quick Pic

- Great Barrier, chemical resistant
- High strength, nylon scrim reinforced
- Excellent abrasion resistance
- Liquid splash and dray particulate protection
- Exceeds NFPA 2113 for flame resistance

ChemMAX® 1

Entry level Chemical Protective Garment.

You've come to expect quality from Lakeland Industries. We've utilized our vast knowledge in the industry to develop a superior product in ChemMAX® 1. Offering quality along with durability, this cost-effective entry level product will please distributors, safety engineers and plant purchasing managers. Whether you are in manufacturing, environmental clean up or chemical handling, you can trust the ChemMAX® family of products to protect your workers from harm.

ChemMAX® is constructed with a unique polyethylene barrier film and a continuous filament polypropylene nonwoven. ChemMAX®1 garments bar many harmful contaminants from penetrating to inner clothing. Available with serged, bound and sealed seams for scalability, ChemMAX® fits the Lakeland standard at a price you can afford.



Property	Test Method	Units	ChemMAX® 1
Basis Weight	ASTM D3776	oz/sy	2.29
Grab Tensile MD	ASTM D5034	pounds	35
Grab Tensile XD		pounds	27
Trapezoidal Tear MD	ASTM D5733	pounds	13.8
Trapezoidal Tear XD		pounds	14.2
Ball Burst	ASTM D751	pounds	25.5

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

Challenge Chemical	CAS Number	Physical State	ChemMAX® 1
Acetone	67-64-1	Liquid	imm.
Acetonitrile	75-05-8	Liquid	imm.
Ammonia Gas	7664-41-7	Gas	imm.
1,3-Butadiene Gas	106-99-0	Gas	imm.
Carbon Disulfide	75-15-0	Liquid	imm.
Chlorine Gas	7782-50-5	Gas	imm.
Dichloromethane	75-09-2	Liquid	imm.
Diethylamine	109-89-7	Liquid	imm.
Dimethyl Formamide	68-12-2	Gas	40
Ethyl Acetate	141-78-6	Liquid	imm.
Ethylene Oxide Gas	75-21-8	Gas	>480
n-Hexane	110-54-3	Liquid	imm.
Hydrogen Chloride Gas	7647-01-0	Gas	imm.
Methanol	67-56-1	Liquid	imm.
Methyl Chloride Gas	74-87-3	Gas	imm.
Nitrobenzene	98-95-3	Liquid	imm.
Sodium Hydroxide, 50%	1310-73-2	Liquid	>480
Sulfuric Acid, 98%	7664-93-9	Liquid	>480
Tetrachloroethylene	127-18-4	Liquid	imm.
Tetrahydrofuran	109-99-9	Liquid	imm.
Toluene	108-88-3	Liquid	imm.

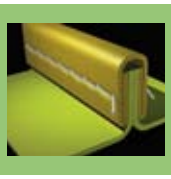
ND = None Detected
> = greater than
L = liquid
G = gas
Numbers reported are averages of samples tested by the ASTM F739 test method. Sample results do vary and therefore averages for these results are reported.

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

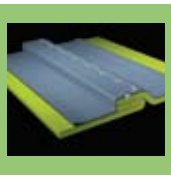
Note: *Chemical Resistance Data is in accordance with ASTM F-739 test method. Testing is performed on fabric samples only, not finished garments. Sources for all test data are independent laboratory conditions and not actual use conditions.*



Serged Seams



Sewn & Bound Seams



Sealed Seams



C1S412
C1B412
Coverall, zipper
Sizes: S – 5XL
Case Pack: 25
Case Weight: 11 lbs.



C1S414
C1B414
Coverall, zipper, attached hood, boots, elastic wrists.
Sizes: S – 5XL
Case Pack: 25
Case Weight: 9 lbs.



C1S417
C1B417
Coverall, zipper, elastic wrists and ankles.
Sizes: S – 5XL
Case Pack: 25
Case Weight: 11 lbs.



C1S428
C1B428
Coverall, zipper, attached hood, elastic wrists and ankles.
Sizes: S – 5XL
Case Pack: 25
Case Weight: 12 lbs.



C1T100
Coverall, collar, open wrists and ankles.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 6 lbs.



C1T130
Coverall, hood, elastic face, wrists and ankles.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 6 lbs.



C1T150
Coverall, hood, elastic face, wrists, attached boots.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 6 lbs.

ChemMAX® 1 Quick Pic

- Available in serged, bound, and sealed seams
- Economical, lightweight
- Light Chemical Resistance

Tychem® QC

Tychem® QC Polycoated Garments for Lightweight Splash Protection.

Tychem® QC polyethylene-coated garments from Lakeland provide excellent lightweight splash protection from many inorganic acids and other liquid chemicals. Tychem® QC is a combination of Tyvek® fabric and a 1.25 mils coating of polyethylene. It is a good economical choice for use in many industrial plants and chemical cleanup operations. Seams are available in either serged, bound or heat sealed styles for increased holdout of liquids and dry particulates. Tychem® QC garments are available in high visibility yellow or gray.



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

Chemical Name	Physical Phase	Normalized Breakthrough Time (min.)	Average Permeation Rate (µg/cm2/min)
Acetone	L	immediate	10
Acetonitrile	L	immediate	16
Ammonia (gas)	G	immediate	3.1
1,3- Butadiene	G	immediate	12
Carbon disulfide	L	immediate	high
Chlorine gas	G	immediate	>50
Dichloromethane	L	immediate	high
Diethylamine	L	immediate	64
N,N-Dimethylformamide	L	immediate	0.72
Ethyl acetate	L	immediate	12.7
Ethylene oxide	G	immediate	168
n-Hexane	L	immediate	high
Hydrogen chloride	G	immediate	9.3
Methanol	L	immediate	2.2
Methyl chloride	G	immediate	0.27
Nitrobenzene	L	immediate	18
Sodium hydroxide, 50%	L	>480	ND
Sulfuric acid (conc.)	L	>480	ND
Tetrachloroethylene	L	immediate	410
Tetrahydrofuran	L	immediate	183
Toluene	L	immediate	high

ND = None Detected
> = greater than
L = liquid
G = gas
Numbers reported are averages of samples tested by the ASTM F739 test method. Sample results do vary and therefore averages for these results are reported.

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

Tychem® QC Physical Properties

Basis Weight (oz/yd2).....2.1 (ASTM D3776-85)

Thickness (mils).....26 (ASTM D1777-64)

Mullen Burst (psi).....66 (ASTM D3786-87)

Grab (md/xd).....25/35 lbs
(ASTM D53034-90)

Trapezoid (md/xd).....7/5 lbs
(ASTM D1117-80)

Note: *Chemical Resistance Data is in accordance with ASTM F-739 test method. Testing is performed on fabric samples only, not finished garments. Sources for all test data are independent laboratory conditions and not actual use conditions.*



05412
Tychem® QC coverall with collar and zipper. Serged seams.
Sizes: S – 5XL
Case Pack: 25
Case Weight: 9 lbs.
**Sewn and Bound seams available as Style No. 55412.*

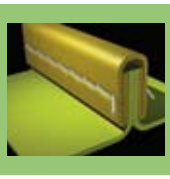


05414
Tychem® QC coverall, zipper, attached hood, boots, elastic wrists. Serged seams.
Sizes: S – 5XL
Case Pack: 25
Case Weight: 13 lbs.
**Sewn and Bound seams available as Style No. 55414.*

Serged Seams



Sewn & Bound Seams

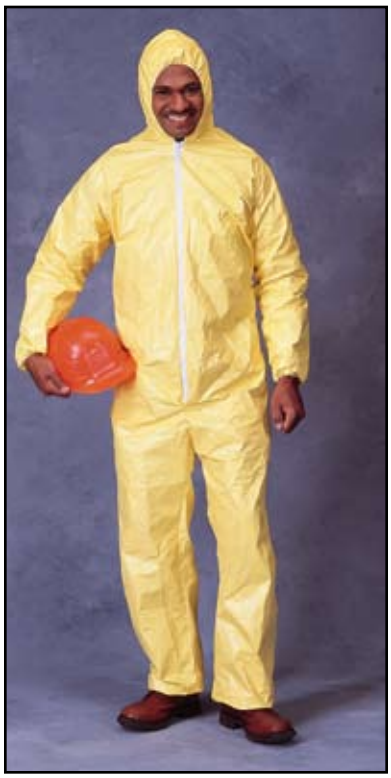


Tychem® QC Quick Pic

- Economical
- Light Chemical Splash Protection



05417
Tychem® QC coverall with collar and zipper, elastic wrist and ankles. Serged seams.
Sizes: S – 5XL
Case Pack: 25
Case Weight: 11 lbs.
**Sewn and Bound seams available as Style No. 55417.*



05428
Tychem® QC coverall, zipper, attached hood, elastic wrists and ankles. Serged seams.
Sizes: S – 5XL
Case Pack: 25
Case Weight: 11 lbs.
**Sewn and Bound seams available as Style No. 55428.*



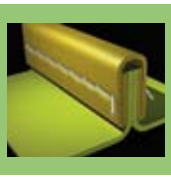
Serged Seams



05201
Tychem® QC shirt - snap closure, long sleeve.
Sizes: S – 5XL
Case Pack: 50
Case Weight: 10 lbs.



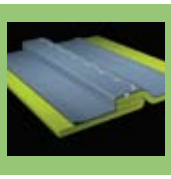
05301
Tychem® QC pants - elastic waist
Sizes: S – 5XL
Case Pack: 50
Case Weight: 10 lbs.



Sewn & Bound Seams



55455
Tychem® QC encapsulated suit, front entry, zipper, hood with Mylar® face shield, boots, elastic wrist, air line hook up. Suit is not gas/vapor tight. Available in Sewn and Bound seam only; yellow only. Rear entry available as Style 55453.
Sizes: S – 5XL
Case Pack: 25
Case Weight: 15 lbs.



Sealed Seams



Apron, Style No. 527
Tychem® QC open back apron, long sleeves, elastic wrist, sewn ties. Available in yellow only.
Sizes: 30" x 39"
Case Pack: 50
Case Weight: 10 lbs.



70100
Tychem® QC coverall, collar, open wrists and ankles.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 6 lbs.

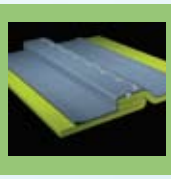


70110
Tychem® QC coverall, collar, elastic wrists and ankles.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 6 lbs.



70120
Tychem® QC coverall, hood, elastic face, open wrists and ankles.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 7 lbs.

Sealed Seams





70150
Tychem® QC coverall, hood, elastic face, elastic wrists, attached sock boots.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 8 lbs.



70250
Tychem® QC jacket with collar, double storm flap with hook and loop closure, zipper, elastic wrists.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 6 lbs.

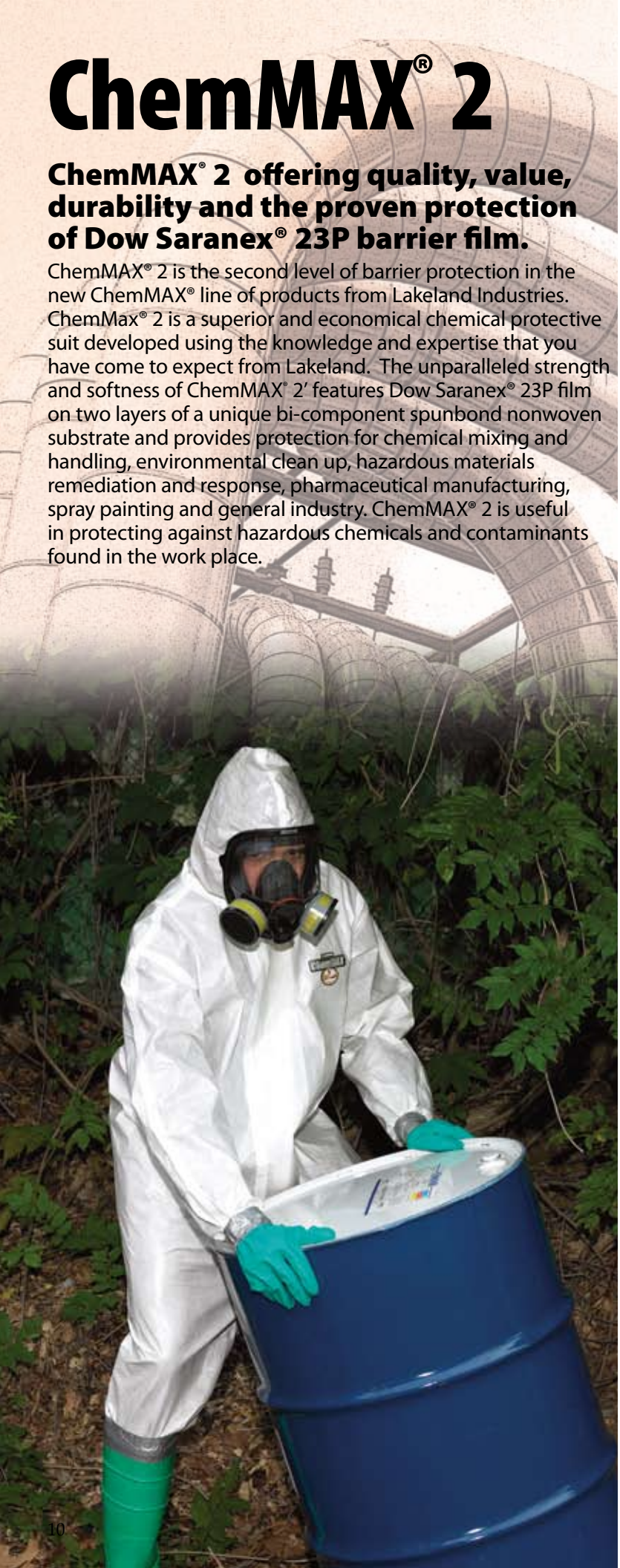


70300
Tychem® QC pants, elastic waist, hemmed cuffs.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 6 lbs.

ChemMAX® 2

ChemMAX® 2 offering quality, value, durability and the proven protection of Dow Saranex® 23P barrier film.

ChemMAX® 2 is the second level of barrier protection in the new ChemMAX® line of products from Lakeland Industries. ChemMax® 2 is a superior and economical chemical protective suit developed using the knowledge and expertise that you have come to expect from Lakeland. The unparalleled strength and softness of ChemMAX® 2' features Dow Saranex® 23P film on two layers of a unique bi-component spunbond nonwoven substrate and provides protection for chemical mixing and handling, environmental clean up, hazardous materials remediation and response, pharmaceutical manufacturing, spray painting and general industry. ChemMAX® 2 is useful in protecting against hazardous chemicals and contaminants found in the work place.



Property	Test Method	Units	ChemMAX®2
Basis Weight	ASTM D3776	oz/sy	4.3
Grab Tensile MD	ASTM D5034	pounds	47
Grab Tensile XD		pounds	33.9
Trapezoidal Tear MD	ASTM D5733	pounds	29.95
Trapezoidal Tear XD		pounds	12.47
Ball Burst	ASTM D751	lbs.	48
Surface Resistance	EN1149-1:2006	Pass/Fail	Pass

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

Chemical Name	CAS Number	Physical State	ChemMAX® 2
Acetone	67-64-1	Liquid	28
Acetonitrile	75-05-8	Liquid	<15
Ammonia Gas	7664-41-7	Gas	15
1,3-Butadiene Gas	106-99-0	Gas	>480
Carbon Disulfide	75-15-0	Liquid	imm.
Chlorine Gas	7782-50-5	Gas	>480
Dichloromethane	75-09-2	Liquid	imm.
Diethylamine	109-89-7	Liquid	imm.
Dimethyl Formamide	68-12-2	Gas	89
Ethyl Acetate	141-78-6	Liquid	21
Ethylene Oxide Gas	75-21-8	Gas	24
n-Hexane	110-54-3	Liquid	21
Hydrogen Chloride Gas	7647-01-0	Gas	>410
Methanol	67-56-1	Liquid	>480
Methyl Chloride Gas	74-87-3	Gas	>480
Nitrobenzene	98-95-3	Liquid	45
Sodium Hydroxide, 50%	1310-73-2	Liquid	>480
Sulfuric Acid, 98%	7664-93-9	Liquid	>480
Tetrachloroethylene	127-18-4	Liquid	imm.
Tetrahydrofuran	109-99-9	Liquid	imm.
Toluene	108-88-3	Liquid	imm.

ND = None Detected
> = greater than
L = liquid
G = gas
Numbers reported are averages of samples tested by the ASTM F739 test method. Sample results do vary and therefore averages for these results are reported.

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

Note: *Chemical Resistance Data is in accordance with ASTM F-739 test method. Testing is performed on fabric samples only, not finished garments. Sources for all test data are independent laboratory conditions and not actual use conditions.*

ChemMAX® 2 Quick Pic

- Bound and sealed seams
- Light Chemical Splash Protection

Order Now! 1-800-645-9291 • www.lakeland.com



C2B412
Coverall, zipper
Sizes: S – 5XL
Case Pack: 12
Case Weight: 12 lbs.



C2B414
Coverall, zipper, attached hood, boots, elastic wrists.
Sizes: S – 5XL
Case Pack: 12
Case Weight: 12 lbs.



C2B417
Coverall, zipper, elastic wrists and ankles.
Sizes: S – 5XL
Case Pack: 12
Case Weight: 11 lbs.



C2B428
Coverall, zipper, attached hood, elastic wrists and ankles.
Sizes: S – 5XL
Case Pack: 12
Case Weight: 12 lbs.



C2T100
Coverall, collar, open wrists and ankles.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 6 lbs.



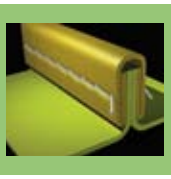
C2T110
Coverall, collar, elastic wrist and ankles.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 6 lbs.



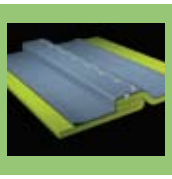
C2T130
Coverall, hood, elastic face, wrists and ankles.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 7 lbs.



C2T150
Coverall hood, elastic face, elastic wrists, and attached boots.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 7 lbs.



Sewn & Bound Seams



Sealed Seams

Tychem® SL

Tychem® SL Garments – Protection Against A Broad Range of Chemicals.

Tychem® SL is a laminated fabric incorporating DuPont's Tyvek® spunbonded olefin and Dow Chemical's Saranex® 23-P film. Tychem® SL protective clothing is available with a choice of two seam configurations: Sewn and Bound or Heat Sealed. Tychem® SL provides reliable and economical protection against a broad spectrum of chemicals. This apparel is a top choice among workers who are mixing, loading or applying agricultural chemicals, engaged in clean up operations, and general industrial environments.



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

Chemical Name	Physical Phase	Normalized Break-through Time (min.)	Average Permeation Rate (µg/cm2/min)
Acetone	L	24	1.6
Acetonitrile	L	12	2.8
Ammonia (gas)	G	32	0.15
1,3- Butadiene	G	>480	<0.02
Carbon disulfide	L	immediate	>50
Chlorine gas	G	>480	<0.01
Dichloromethane	L	immediate	>50
Diethylamine	L	12	>50
N,N-Dimethylformamide	L	112	0.85
Ethyl acetate	L	14	0.54
Ethylene oxide	G	immediate	8.4
n-Hexane	L	146	0.48
Hydrogen chloride	G	>480	<0.01
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
Tetrachloroethylene	L	immediate	5.7
Tetrahydrofuran	L	immediate	>50
Toluene	L	immediate	25

ND = None Detected, > = greater than, L = liquid, G = gas

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

Permeation Data for 595 Class/Subclass Chemical Warfare Agents

Agent	Common Name	CAS Number	Protocol	Avg. Breakthrough Time	Minimum Detectable Permeation
GA	Tabun	77-81-6	DN5	nt	nt
GB	Sarin	107-44-8	DN5 DN6	>6hrs. nt	<0.00012 nt
GD	Soman	99-64-0	DN5 DN6	nt nt	nt nt
HD	Sulfur Mustard	505-60-2	DN3 DN4	>3hrs. nt	<0.10000 nt
L	Lewisite	541-25-3	DN3 DN4	>6hrs. nt	<0.10000 nt
VX	VX	50782-69-9	DN5 DN6	>12hrs. nt	<0.00012 nt

> = greater than, < = less than, nt = not tested

Fabric Test Protocols. All tests performed in triplicate for DuPont Nonwovens by an independent accredited laboratory at 22°C, 50% R.H.

Protocol DN3 – MIL-Std-282, Method T-209 (HD) or modified for Lewisite, for 12 hours at 10 g/m2.
Protocol DN4 – MIL-Std-282, Method T-209 (HD) or modified for Lewisite, for 12 hours at 100 g/m2 (total coverage).
Protocol DN5 – MIL-Std-282, Method T-208 (GB) or modified for GA, GD, and VX, for 12 hours at 10 g/m2.
Protocol DN6 – MIL-Std-282, Method T-208 (GB) or modified for GA, GD, and VX, for 12 hours at 100 g/m2 (total coverage).

Tychem® SL Physical Properties

Basis Weight (oz/yd2).....3.1 (ASTM D3776-85)
Thickness (mils).....10.3 (ASTM D1777-64)
Mullen Burst (psi).....78 (ASTM D3786-87)
Breaking Strength
Grab (md/xd).....42/45 lbs (ASTM D53034-90)
Tearing Strength
Trapezoid (md/xd).....11/9 lbs (ASTM D1117-80)

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

Note: *Chemical Resistance Data is in accordance with ASTM F-739 test method. Testing is performed on fabric samples only, not finished garments. Sources for all test data are independent laboratory conditions and not actual use conditions.*

Sewn and Bound Seams

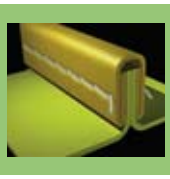


44414
Tychem® SL coverall, zipper with storm flap, attached hood, boots, elastic wrists. Bound seam construction.
Sizes: S – 5XL
Case Pack: 12
Case Weight: 10 lbs.



44412
Tychem® SL coverall with collar, zipper with storm flap. Bound seam construction.
Sizes: S – 5XL
Case Pack: 12
Case Weight: 10 lbs.

Sewn & bound Seams





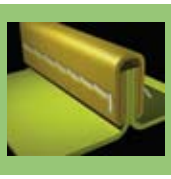
44417
Tychem® SL coverall with collar, zipper with storm flap, elastic wrist and ankles. Bound seam construction.
Sizes: S – 5XL
Case Pack: 12
Case Weight: 10 lbs.



44427
Tychem® SL coverall, zipper with storm flap, attached hood. Bound seam construction.
Sizes: S – 5XL
Case Pack: 12
Case Weight: 12 lbs

Tychem® SL Quick Pic

- Light chemical splash protection
- Available in gray
- Tested against some chemical warfare agents



Sewn & bound Seams



44428
Tychem® SL coverall, zipper with storm flap, attached hood, elastic wrist and ankles. Bound seam construction.
Sizes: S – 5XL
Case Pack: 12
Case Weight: 12 lbs.



44201
Tychem® SL shirt - snap closure, long sleeve.
Sizes: S – 5XL
Case Pack: 30
Case Weight: 10 lbs.



44301
Tychem® SL pants - elastic waist.
Sizes: S – 5XL
Case Pack: 30
Case Weight: 10 lbs



44901
Tychem® SL shoe cover, elastic top.
Sizes: S/M, L/ XL
Case Pack: 100 pr.
Case Weight: 9 lbs



44903
Tychem® SL boot cover, elastic top.
Sizes: S/M, L/ XL
Case Pack: 200 pr.
Case Weight: 11 lbs.



72110
Tychem® SL coverall, collar, elastic wrists and ankles.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 6 lbs



73150
Tychem® SL grey coverall, hood, elastic face, elastic wrists, attached boots.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 8 lbs

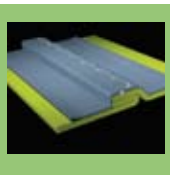


72165
Tychem® SL coverall, **respirator fit hood**, double storm flap with hook and loop closure, elastic wrists, attached boots with boot flaps.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 8 lbs.



73130
Tychem® SL grey coverall, hood, elastic face, wrists and ankles.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 7 lbs

Heat Sealed Seams





72400
Tychem® SL encapsulated suit (Level B), rear entry, flat back, 48" zipper, storm flap, 20 mil PVC faceshield, elastic wrists, 1 exhaust port with shroud, air tube inlet, attached sock boots with boot flaps. Suit is not gas/vapor tight.
Sizes: S – 5XL
Case Pack: 3
Case Weight: 7 lbs.
Also available in rear entry, expanded back, item 72450, and front entry, expanded back, item 72440.



72735
Tychem® SL apron, bib style, knee length, ties at neck and waist.
Sizes: one size
Case Pack: 12
Case Weight: 8 lbs

ChemMAX® 3

Ideal for the industrial environment as well as emergency responders and law enforcement, ChemMAX® 3 uses the latest technology to produce a superior product. Durable and lightweight, ChemMAX® 3 provides a barrier against a broad spectrum of toxic industrial chemicals, dual use chemicals, chemical warfare agents and other harmful contaminants.

The multi-layer film is applied to a heavy polypropylene nonwoven for increased strength and durability. The barrier film is significantly softer than other products on the market, resulting in a quiet, more comfortable garment.

Put your trust in a ChemMAX® 3 garment and you will feel confident that you are doing your best to protect your team from the dangers lurking around them.



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

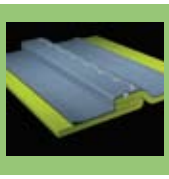
Challenge Chemical	CAS Number	Physical State	ChemMAX® 3
Acetone	67-64-1	Liquid	>480
Acetonitrile	75-05-8	Liquid	>480
Ammonia Gas	7664-41-7	Gas	>480
1,3-Butadiene Gas	106-99-0	Gas	>480
Carbon Disulfide	75-15-0	Liquid	178
Chlorine Gas	7782-50-5	Gas	>480
Dichloromethane	75-09-2	Liquid	>480
Diethylamine	109-89-7	Liquid	imm.
Dimethyl Formamide	68-12-2	Liquid	>480
Ethyl Acetate	141-78-6	Liquid	>480
Ethylene Oxide Gas	75-21-8	Gas	>480
n-Hexane	110-54-3	Liquid	>480
Hydrogen Chloride Gas	7647-01-0	Gas	>480
Methanol	67-56-1	Liquid	180
Methyl Chloride Gas	74-87-3	Gas	>480
Nitrobenzene	98-95-3	Liquid	>480
Sodium Hydroxide, 50%	1310-73-2	Liquid	>480
Sulfuric Acid, 98%	7664-93-9	Liquid	>480
Tetrachloroethylene	127-18-4	Liquid	>480
Tetrahydrofuran	109-99-9	Liquid	320
Toluene	108-88-3	Liquid	>480

Property	Test Method	Units	ChemMAX 3
Basis Weight	ASTM D3776	oz/sy	4.5
Grab Tensile MD	ASTM D5034	pounds	58.7
Grab Tensile XD		pounds	42.2
Trapezoidal Tear MD	ASTM D5733	pounds	25.6
Trapezoidal Tear XD		pounds	19.8
Ball Burst	ASTM D751	pounds	54.5
Surface Resistance	EN1149-1:2006	Pass/Fail	Pass

ND = None Detected
> = greater than
L = liquid
G = gas
Numbers reported are averages of samples tested by the ASTM F739 test method. Sample results do vary and therefore averages for these results are reported.

Warnings:
1. ChemMAX® 3 is not flame resistant and should not be used around heat, flame sparks, or in potentially flammable or explosive environments.
2. Garments made of ChemMAX®3 should have slip resistant or anti-slip materials on the outer surface of boots, shoe covers or other garment surfaces in conditions where slipping could occur.

Note: *Chemical Resistance Data is in accordance with ASTM F-739 test method. Testing is performed on fabric samples only, not finished garments. Sources for all test data are independent laboratory conditions and not actual use conditions.*



Sealed Seams

ChemMAX® 3 Quick Pic

- Sealed seams
- Heavy chemical splash protection
- Flexible and lightweight
- Chemical Warfare Agent tested

Order Now! 1-8 m



C3T100
Coverall, collar, open wrists and ankles.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 6 lbs



C3T110
Coverall, collar, elastic wrists and ankles.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 6 lbs



C3T130
Coverall, hood, elastic face, wrists and ankles.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 6 lbs



C3T400
Encapsulated suit, rear entry, flat back, 48" zipper, storm flap, 20 mil PVC face shield, elastic wrists, 1 exhaust port with shroud, air tube inlet, attached sock boots with boot flap. Suit is not gas/vapor tight.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 6 lbs



C3T150
Coverall, hood, elastic face and wrists, attached boots.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 7 lbs



C3T151
Coverall, respirator-fit hood, elastic face, elastic wrists and attached boots.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 7 lbs



C3T160
Coverall, hood, elastic wrists, sock boots with flaps.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 7 lbs



C3T450
Encapsulated suit, rear entry, expanded back, 48" zipper, storm flap, 20 mil PVC face shield, elastic wrists, 2 exhaust ports with shroud, air tube inlet, attached sock boots with boot flap. Suit is not gas/vapor tight.
Sizes: S – 5XL
Case Pack: 3
Case Weight: 8 lbs

Tychem® F

Tychem® F Garments – A High Level of Protection Against Chemical and Biological Warfare Agents.

Tychem® F represents a remarkable step forward in the provision of individual protection for both Armed Forces and Civilian Populations in areas where chemical and/or biological warfare could take place, or where there is a risk of contamination from an industrial accident.

Tychem® F provides a tough and safe barrier to all known chemical warfare agents in liquid, gas or aerosol formats and represents the first simple, economic and disposable material for individual protection suits.



Permeation Data for ASTM Recommended List of Chemicals for Evaluating Protective Clothing Materials (ASTM F1001) ASTM F739 Permeation Testing

Challenge Chemical	CAS Number	Physical State	Normalized Breakthrough Time (min.)	Average Permeation Rate (µg/cm2/min)
Acetone	67-64-1	Liquid	>480	0.06
Acetonitrile	75-05-8	Liquid	157	0.19
Ammonia Gas	7664-41-7	Gas	79	0.76
1,3-Butadiene Gas	106-99-0	Gas	>480	0.07
Carbon Disulfide	75-15-0	Liquid	>480	0.05
Chlorine Gas	7782-50-5	Gas	>480	0.2
Dichloromethane	75-09-2	Liquid	imm.	8
Diethylamine	109-89-7	Liquid	>480	<0.001
Dimethyl Formamide	68-12-2	Liquid	>480	<0.01
Ethyl Acetate	141-78-6	Liquid	>480	<0.001
Ethylene Oxide Gas	75-21-8	Gas	65	104
n-Hexane	110-54-3	Liquid	>480	<0.001
Hydrogen Chloride Gas	7647-01-0	Gas	>480	<0.1
Methanol	67-56-1	Liquid	77	0.26
Methyl Chloride Gas	74-87-3	Gas	>480	0.0004
Nitrobenzene	98-95-3	Liquid	>480	<0.001
Sodium Hydroxide, 50%	1310-73-2	Liquid	>480	<0.1
Sulfuric Acid, 98%	7664-93-9	Liquid	>480	<0.1
Tetrachloroethylene	127-18-4	Liquid	>480	<0.022
Tetrahydrofuran	109-99-9	Liquid	484	0.003
Toluene	108-88-3	Liquid	>480	0.003

ND = None Detected, > = greater than, L = liquid, G = gas
Numbers reported are averages of samples tested by the ASTM F739 test method. Sample results do vary and therefore averages for these results are reported.

Permeation Data for 595 Class/Subclass Chemical Warfare Agents

Agent	Common Name	CAS Number	Protocol	Avg. Break-through Time (min)	Minimum Detectable Permeation
GA	Tabun	77-81-6	DN5	nt	nt
			DN6	>720	$< 2 \times 10^{-6}$
GB	Sarin	107-44-8	DN5	nt	nt
			DN6	>720	$< 2 \times 10^{-6}$
GD	Soman	99-64-0	DN5	nt	nt
			DN6	>720	$< 2 \times 10^{-6}$
HD	Sulfur Mustard	505-60-2	DN3	nt	nt
			DN4	>720	<0.002
L	Lewisite	541-25-3	DN3	nt	nt
			DN4	360	0.006
VX	VX	50782-69-9	DN5	nt	nt
			DN6	>720	$< 2 \times 10^{-6}$

> = greater than, < = less than, nt = not tested
Fabric Test Protocols. All tests performed in triplicate for DuPont Nonwovens by an independent accredited laboratory at 22°C, 50% R.H.

Protocol DN3 – MIL-Std-282, Method T-209 (HD) or modified for Lewisite, for 12 hours at 10 g/m^2.
Protocol DN4 – MIL-Std-282, Method T-209 (HD) or modified for Lewisite, for 12 hours at 100 g/m^2 (total coverage).
Protocol DN5 – MIL-Std-282, Method T-208 (GB) or modified for GA, GD, and VX, for 12 hours at 10 g/m^2.
Protocol DN6 – MIL-Std-282, Method T-208 (GB) or modified for GA, GD, and VX, for 12 hours at 100 g/m^2 (total coverage).

Note: *Chemical Resistance Data is in accordance with ASTM F-739 test method. Testing is performed on fabric samples only, not finished garments. Sources for all test data are independent laboratory conditions and not actual use conditions.*



60132
Coverall, **respirator-fit hood,** storm flap, elastic face, wrists and ankles.
Sizes: S-5X
Case Pack: 6
Case Weight: 7 lbs.



°60151
Coverall, zipper front, attached **respirator-fit hood,** storm flap, elastic face and wrists, attached boots.
Sizes: S-5X
Case Pack: 6
Case Weight: 7 lbs.

Tychem® F Quick Pic

- Tested against all chemical warfare agents
- Used by military and civilian responders

Tychem® BR

Tychem® BR. Chemical Protection and Enhanced Flexibility.

Handling hazardous chemicals is a dangerous business. You need the most protection possible. That's where Tychem® BR fits in. Providing extensive protection, Tychem® BR is supported with a broad range of barrier documentation. In fact, Tychem® BR has been tested against more than 200 chemicals, including the ones most involved in industrial or HazMat incidents.

Lakeland Chemical protective clothing is known for offering excellent protection and value. Tychem® BR is another fine example. It offers the tear, puncture and abrasion resistance you deserve. Superior protection does not come at the expense of comfort. Tychem® BR garments are soft and lightweight, allowing workers to move with ease. Tychem® BR is ideal for a variety of work environments.

Tychem® BR is yellow for high visibility. Whether there is bright or dim light, Tychem® BR can be seen. That's why it is an excellent choice for HazMat teams.



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

Chemical Name	Physical Phase	Normalized Breakthrough Time (min.)	Average Permeation Rate (µg/cm2/min)
Acetone	L	>480	<0.001
Acetonitrile	L	>480	<0.003
Ammonia (gas)	G	46	0.62
1,3- Butadiene	G	>480	<0.001
Carbon disulfide	L	>480	<0.001
Chlorine gas	G	>480	<0.01
Dichloromethane	L	432	0.06
Diethylamine	L	>480	<0.001
N,N-Dimethylformamide	L	>480	<0.001
Ethyl acetate	L	>480	<0.001
Ethylene oxide	G	>480	<0.01
n-Hexane	L	>480	<0.001
Hydrogen chloride	G	>480	<0.1
Methanol	L	157	0.81
Methyl chloride	G	>480	<0.001
Nitrobenzene	L	>480	<0.001
Sodium hydroxide, 50%	L	>480	<0.01
Sulfuric acid (conc.)	L	>480	<0.01
Tetrachloroethylene	L	>480	<0.001
Tetrahydrofuran	L	>480	<0.001
Toluene	L	>480	<0.001

ND = None Detected, > = greater than, L = liquid, G = gas

Permeation Data for 595 Class/Subclass Chemical Warfare Agents

Agent	Common Name	CAS Number	Protocol	Avg. Breakthrough Time	Minimum Detectable Permeation
GA	Tabun	77-80-6	DN5	>12 hrs.	<0.0001
GB	Sarin	107-44-8	DN5	>12 hrs.	<0.0001
			DN6	>12 hrs.	<0.0001
GD	Soman	99-64-0	DN5	>12 hrs.	<0.0001
			DN6	nt	nt
HD	Sulfur Mustard	505-60-2	DN3	>12 hrs.	<1.000
			DN4	>12 hrs.	<1.000
L	Lewisite	541-25-3	DN3	>12 hrs.	<0.060
			DN4	2 hrs.	<0.042
VX	VX		DN5	>12 hrs.	<0.0001
			DN6	>12 hrs.	<0.0001

> = greater than, < = less than, nt = not tested

Fabric Test Protocols.-*All tests performed in triplicate for DuPont Nonwovens by an independent accredited laboratory at 22˚C, 50% R.H.*
Protocol DN3 – MIL-Std-282, Method T-209 (HD) or modified for Lewisite, for 12 hours at 10 g/m².
Protocol DN4 – MIL-Std-282, Method T-209 (HD) or modified for Lewisite, for 12 hours at 100 g/m² (total coverage).
Protocol DN5 – MIL-Std-282, Method T-208 (GB) or modified for GA, GD, and VX, for 12 hours at 10 g/m².
Protocol DN6 – MIL-Std-282, Method T-208 (GB) or modified for GA, GD, and VX, for 12 hours at 100 g/m² (total coverage).

Tychem® BR Physical Properties

Basis Weight (oz/yd2).....6.6 (ASTM D3776)

Thickness (mils).....16 (ASTM D1777)

Ball Burst (lbf).....90 (ASTM D3787-89)

Grab Tensile(lbf).....90/84 lbs (ASTM D5034)

Trap Tear (lbf).....19/19 lbs (ASTM D5597)

Note: *Chemical Resistance Data is in accordance with ASTM F-739 test method. Testing is performed on fabric samples only, not finished garments. Sources for all test data are independent laboratory conditions and not actual use conditions.*



Tychem® BR100
Coverall, collar, open wrists and ankles.
Sizes: S - 5XL
Case Pack: 6
Case Weight: 8 lbs



Tychem® BR110
Coverall, collar, elastic wrists and ankles.
Sizes: S - 5XL
Case Pack: 6
Case Weight: 8 lbs



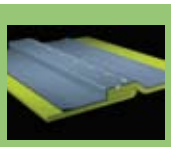
Tychem® BR115
Coverall, collar, elastic wrists and overboots, 5" storm flap.
Sizes: S - 5XL
Case Pack: 6
Case Weight: 8 lbs



Tychem® BR130
Coverall, hood, elastic face, elastic wrists and ankles.
Sizes: S - 5XL
Case Pack: 6
Case Weight: 8 lbs

Tychem® BR140
Coverall, hood, elastic face, open wrists and attached boots.
Sizes: S - 5XL
Case Pack: 6
Case Weight: 8 lbs





Heat Sealed Seams



Tychem® BR150
Coverall, hood, elastic face, elastic wrists, attached boots.
Sizes: S - 5XL
Case Pack: 6
Case Weight: 8 lbs



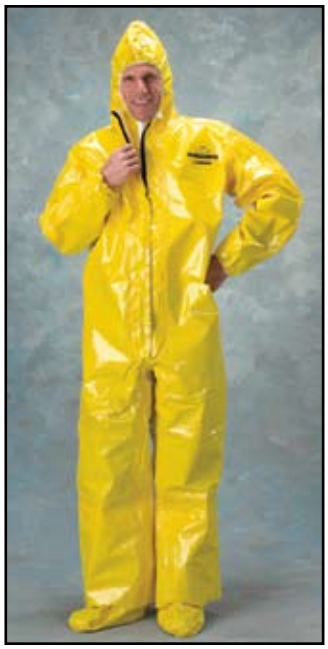
Tychem® BR155
Coverall, expanded back for SCBA, elastic face and wrists, overboots.
Sizes: S - 5XL
Case Pack: 6
Case Weight: 9 lbs



Tychem® BR160
Coverall, hood, elastic wrists, sock boots with boot flaps.
Sizes: S - 5XL
Case Pack: 6
Case Weight: 9 lbs

Tychem® BR Quick Pic

- Heavy chemical splash protection
- Flexible and lightweight
- High-visibility
- Superior fabric strength
- Chemical Warfare Agent tested



Tychem® BR165
Coverall, **respirator fit hood,** double storm flap with hook and loop closure, elastic face and wrists and attached sock boots with boot flaps.
Sizes: S - 5XL
Case Pack: 6
Case Weight: 9 lbs



Tychem® BR170
Coverall, hood, elastic face and wrists with splash guards, sock boots with boot flaps.
Sizes: S - 5XL
Case Pack: 6
Case Weight: 8 lbs



Tychem® BR730
Apron, long sleeve, 32" length, elastic wristis, ties at neck and waist.
Sizes: 26" - 36"
Case Pack: 12
Case Weight: 9 lbs



Tychem® BR250
Jacket, Collar, zipper, elastic wrists, double storm flap with hook and loop closure.
Sizes: S - 5XL
Case Pack: 6
Case Weight: 8 lbs



Tychem® BR300
Pants, elastic waist, hemmed cuffs.
Sizes: S - 5XL
Case Pack: 6
Case Weight: 9 lbs



Tychem® BR320
Pants, bib-style, adjustable suspenders.
Sizes: S - 5XL
Case Pack: 6
Case Weight: 9 lbs



Tychem® BR450
Encapsulated suit, (level B), rear entry, expanded back, 48" zipper, storm flap, 20 mil PVC face shield, elastic wrists, 2 exhaust ports with shroud, attached sock boots with boot flap. Suit is not gas/vapor tight.
Sizes: S - 5XL
Case Pack: 1
Case Weight: 9 lbs
Also Available as front entry suit, style BR440.



Tychem® BR400
Encapsulated suit, (level B), rear entry, flat back, 48" zipper, storm flap, 20 mil PVC face shield, elastic wrists, 1 exhaust port with shroud, air tube inlet, attached sock boots with boot flap. Suit is not gas/vapor tight.
Sizes: S - 5XL
Case Pack: 6
Case Weight: 8 lbs



Tychem® LV

Tychem® LV. Low-Visibility Chemical Protection and Enhanced Flexibility.

Handling hazardous chemicals is a dangerous business. You need the most protection possible. That's where Tychem® LV fits in.

Providing extensive protection, Tychem® LV is supported with a broad range of barrier documentation. In fact, Tychem® LV has been tested against more than 200 chemicals, including the ones most involved in industrial or HazMat incidents.

Lakeland Chemical protective clothing is known for offering excellent protection and value. Tychem® LV is another fine example. It offers the tear, puncture and abrasion resistance you deserve. Superior protection does not come at the expense of comfort. Tychem® LV garments are soft and lightweight, allowing workers to move with ease. Tychem® LV is ideal for a variety of work environments. Tychem® LV is olive drab for low visibility.



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

Chemical Name	Physical Phase	Normalized Breakthrough Time (min.)	Average Permeation Rate (µg/cm2/min)
Acetone	L	>480	<0.001
Acetonitrile	L	>480	<0.003
Ammonia (gas)	G	46	0.62
1,3- Butadiene	G	>480	<0.001
Carbon disulfide	L	>480	<0.001
Chlorine gas	G	>480	<0.01
Dichloromethane	L	432	0.06
Diethylamine	L	>480	<0.001
N,N-Dimethylformamide	L	>480	<0.001
Ethyl acetate	L	>480	<0.001
Ethylene oxide	G	>480	<0.01
n-Hexane	L	>480	<0.001
Hydrogen chloride	G	>480	<0.1
Methanol	L	157	0.81
Methyl chloride	G	>480	<0.001
Nitrobenzene	L	>480	<0.001
Sodium hydroxide, 50%	L	>480	<0.01
Sulfuric acid (conc.)	L	>480	<0.01
Tetrachloroethylene	L	>480	<0.001
Tetrahydrofuran	L	>480	<0.001
Toluene	L	>480	<0.001

ND = None Detected, > = greater than, L = liquid, G = gas

Permeation Data for 595 Class/Subclass Chemical Warfare Agents

Agent	Common Name	CAS Number	Protocol	Avg. Breakthrough Time	Minimum Detectable Permeation
GA	Tabun	77-80-6	DN5	>12 hrs.	<0.0001
GB	Sarin	107-44-8	DN5 DN6	>12 hrs. >12 hrs.	<0.0001 <0.0001
GD	Soman	99-64-0	DN5 DN6	>12 hrs. nt	<0.0001 nt
HD	Sulfur Mustard	505-60-2	DN3 DN4	>12 hrs. >12 hrs.	<1.000 <1.000
L	Lewisite	541-25-3	DN3 DN4	>12 hrs. 2 hrs.	<0.060 <0.042
VX	VX	50782-69-9	DN5 DN6	>12 hrs. >12 hrs.	<0.0001 <0.0001

> = greater than, < = less than, nt = not tested

Fabric Test Protocols.-*All tests performed in triplicate for DuPont Nonwovens by an independent accredited laboratory at 22˚C, 50% R.H.*

Protocol DN3 – MIL-Std-282, Method T-209 (HD) or modified for Lewisite, for 12 hours at 10 g/m².

Protocol DN4 – MIL-Std-282, Method T-209 (HD) or modified for Lewisite, for 12 hours at 100 g/m² (total coverage).

Protocol DN5 – MIL-Std-282, Method T-208 (GB) or modified for GA, GD, and VX, for 12 hours at 10 g/m².

Protocol DN6 – MIL-Std-282, Method T-208 (GB) or modified for GA, GD, and VX, for 12 hours at 100 g/m² (total coverage).

Tychem® LV Physical Properties

Basis Weight (oz/yd2).....6.6 (ASTM D3776)

Thickness (mils).....16 (ASTM D1777)

Ball Burst (lbf).....90 (ASTM D3787-89)

Grab Tensile (lbf).....42/45 (ASTM D5034)*

Trap Tear (lbf).....19/19 (ASTM D5597)*

* MD/CD

Note: *Chemical Resistance Data is in accordance with ASTM F-739 test method. Testing is performed on fabric samples only, not finished garments. Sources for all test data are independent laboratory conditions and not actual use conditions.*



Tychem® LV130
Coverall, hood, elastic face, wrists and ankles.
Sizes: S-5X
Case Pack: 6
Case Weight: 8 lbs.

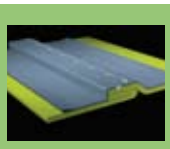


Tychem® LV150
Coverall, hood, elastic face, elastic wrists, attached boots.
Sizes: S-5X
Case Pack: 6
Case Weight: 8 lbs.



Tychem® LV151
Coverall, **respirator fit hood,** elastic face and wrists, attached boots.
Sizes: S-5X
Case Pack: 6
Case Weight: 8 lbs.

Heat Sealed Seams





Tychem® LV166
Tychem® LV coverall, **respirator fit hood**, double storm flap with hook and loop closure, elastic face, wrists and ankles.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 9 lbs



Tychem® LV260
Tychem® LV jacket, drawstring hood, zipper, double storm flap with hook and loop closure, elastic wrists.
Sizes: S – 5XL
Case Pack: 6
Case Weight: 8 lbs.



Tychem® LV450
Tychem® LV encapsulated suit (level B), rear entry, expanded back, 20 mil pvc faceshield, 2 exhaust ports with shrouds, double storm flap with hook and loop closure, attached sock boots with boot flaps, elastic wrists.
Sizes: S – 5XL
Case Pack: 1
Case Weight: 9 lbs

Tychem® LV Quick Pic

- Heavy chemical splash protection
- Flexible and lightweight
- Low-visibility
- Superior fabric strength
- Chemical Warfare Agent tested
- Same material as Tychem® BR but low-visibility

Tychem® TK

Tychem® TK.
Superior Chemical Protective Clothing from Lakeland.

Tychem® TK is the best protection you can wear in hazardous chemical environments. This line of chemical protective clothing is especially suited for protection against toxic, corrosive gases, liquids and solid chemicals. Developed by DuPont, Tychem® TK can be found in industrial, hazmat and domestic preparedness applications. They offer dependable protection with performance that has been proven over a wide range of chemicals.

Tychem® TK garments are extremely durable and puncture resistant. The chemical barrier properties of TK have been tested against 284 challenge chemicals. Permeation data proves the excellent protective capabilities of Tychem® TK. Lakeland's Tychem® TK garments are all lime-yellow in color, highly visible in both bright and dim light. Easily seen in hazy or smoky environments, this line-up of chemical protective clothing is the first line of defense in hazardous material situations.



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

Chemical Name	Physical Phase	Normalized Breakthrough Time (min.)	Average Permeation Rate (µg/cm2/min)
Acetone	L	>480	<0.01
Acetonitrile	L	>480	<0.003
Ammonia (gas)	G	>480	<0.1
1,3- Butadiene	G	>480	<0.07
Carbon disulfide	L	>480	<0.02
Chlorine gas	G	>480	<0.02
Dichloromethane	L	>480	0.03
Diethylamine	L	>480	<0.05
N,N-Dimethylformamide	L	>480	<0.006
Ethyl acetate	L	>480	<0.06
Ethylene oxide	G	>480	<0.1
n-Hexane	L	>480	<0.01
Hydrogen chloride	G	>480	<0.1
Methanol	L	>480	<0.1
Methyl chloride	G	>480	<0.02
Nitrobenzene	L	>480	<0.1
Sodium hydroxide, 50%	L	>480	<0.1
Sulfuric acid (conc.)	L	>480	<0.1
Tetrachloroethylene	L	>480	<0.01
Tetrahydrofuran	L	>480	<0.04
Toluene	L	>480	<0.02

ND = None Detected, > = greater than, L = liquid, G = gas

Permeation Data for 595 Class/Subclass Chemical Warfare Agents

Agent	Common Name	CAS Number	Protocol	Avg. Breakthrough Time	Minimum Detectable Permeation
GA	Tabun	77-80-6	DN5	>12 hrs.	<0.0001
GB	Sarin	107-44-8	DN5	>12 hrs.	<0.0001
			DN6	>12 hrs.	<0.00024
GD	Soman	99-64-0	DN5	>12 hrs.	<0.0001
			DN6	>12 hrs.	<0.0001
HD	Sulfur Mustard	505-60-2	DN3	>12 hrs.	<0.0001
			DN4	>12 hrs.	<0.2000
L	Lewisite	541-25-3	DN3	>12 hrs.	<0.0060
			DN4	>12 hrs.	<0.2000
VX	VX	50782-69-9	DN5	>12 hrs.	<0.0001
			DN6	>12 hrs.	<0.00024

> = greater than, < = less than, nt = not tested

Fabric Test Protocols.–*All tests performed in triplicate for DuPont Nonwovens by an independent accredited laboratory at 22 °C, 50% R.H.*

Protocol DN3 – MIL-Std-282, Method T-209 (HD) or modified for Lewisite, for 12 hours at 10 g/m².
Protocol DN4 – MIL-Std-282, Method T-209 (HD) or modified for Lewisite, for 12 hours at 100 g/m² (total coverage).
Protocol DN5 – MIL-Std-282, Method T-208 (GB) or modified for GA, GD, and VX, for 12 hours at 10 g/m².
Protocol DN6 – MIL-Std-282, Method T-208 (GB) or modified for GA, GD, and VX, for 12 hours at 100 g/m² (total coverage).

Tychem® TK Physical Properties

Basis Weight (oz/yd²)	10.6 (ASTM D3776)
Thickness (mils)	26 (ASTM D1777)
Ball Burst (lbf)	187 (ASTM D3787)
Grab Tensile (lbf)	188/180 (ASTM D5034)*
Trap Tear (lbf)	53/52 (ASTM D5733)*

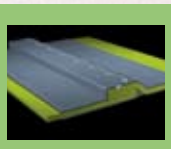
*** MD/CD**

Note: *Chemical Resistance Data is in accordance with ASTM F-739 test method. Testing is performed on fabric samples only, not finished garments. Sources for all test data are independent laboratory conditions and not actual use conditions.*



Tychem® TK 650 Deluxe Level A Suit*
Fully encapsulated rear entry vapor-protective suit (Level A), expanded back, sealed seam plus inside and out, 48" gas tight zipper, double storm flap with hook and loop closure, 2 layer faceshield (10 mil Teflon®/40 mil PVC), Anti-reversing gloves Butyl® and North Silvershield®, 2 exhaust valves, attached sock boots with boot flaps, 1.5" waist belt with 3 belt loops sewn (inside) and sealed. Storage bag included.
Sizes: S - 5X
Case Pack: 1
Case Weight: 10 lbs.
Also available as front entry Style TK640.

Heat Sealed Seams Plus



Heat Sealed Seams





Tychem® TK 640W Deluxe Wide-View Level A Suit*
Fully encapsulated front entry vapor-protective suit (Level A), expanded back, sealed seam plus inside and out, 48" gas tight zipper, double storm flap with hook and loop closure, 2 layer **wide-view** faceshield (10 mil Teflon®/40 mil PVC), Anti-reversing gloves Butyl® and North Silvershield®, 2 exhaust valves, attached sock boots with boot flaps, 1.5" waist belt with 3 belt loops sewn (inside) and sealed. Storage bag included.
Sizes: S - 5X
Case Pack: 1
Case Weight: 10 lbs.
Also available as rear entry Style TK650W.

Kevlar® Knit gloves are not included with garment. They are available as an option.

Tychem® TK Quick Pic

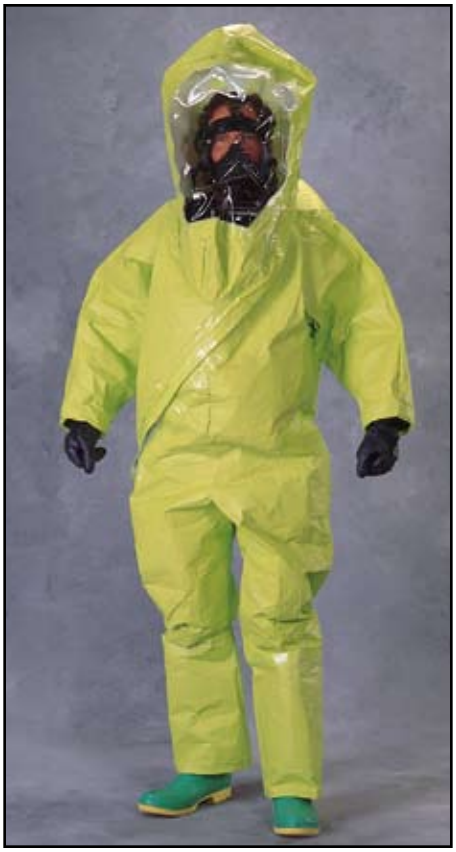
- **>480 minute resistance to ASTM F1001 test battery**
- **>12 hour resistance to chemical warfare agent**
- **Highest level of protection amongst all Tychem® fabrics**





*Detail of expanded back on style numbers TK660 and TK650.**

Tychem® TK 660 Standard Level A Suit*
Fully encapsulated front entry vapor-protective suit (Level A), expanded back, sealed seam on outside only, 48" gas tight zipper, double storm flap with hook and loop closure, 40 mil PVC faceshield, Butyl® gloves, 2 exhaust valves, attached sock boots with boot flaps, 1.5" waist belt with 3 belt loops sewn (inside) and sealed. Storage bag included.
Sizes: S - 5X
Case Pack: 1
Case Weight: 10 lbs.
Also available as rear entry Style TK670.



Tychem® TK 620 Standard Level A Encapsulated Suit
Flat back front entry vapor-protective suit (Level A), sealed seam on outside only, 48" gas tight zipper, double storm flap with hook and loop closure, 40 mil PVC faceshield, Butyl® gloves, 2 exhaust valves, attached sock boots with boot flaps, 1.5" waist belt with 3 belt loops sewn (inside) and sealed. Storage bag included.
Sizes: S - 5X
Case Pack: 1
Case Weight: 10 lbs.
Also available as rear entry Style TK630.



Tychem® TK400 Encapsulated Suit
Encapsulated suit (Level B), rear entry, flat back, 48" zipper, storm flap, 20 mil PVC faceshield, elastic wrists, 1 exhaust port with shroud, air tube inlet, attached sock boots with boot flaps.
Sizes: S - 5X
Case Pack: 1
Case Weight: 5 lbs.



Tychem® TK100
Coverall, collar, open wrists and ankles.
Sizes: S - 5X
Case Pack: 3
Case Weight: 15 lbs.



Tychem® TK110
Coverall, collar, elastic wrists and ankles.
Sizes: S - 5X
Case Pack: 3
Case Weight: 15 lbs.



Tychem® TK115 Coverall
Tychem® TK130
Level B Coverall
Coverall, hood, elastic face, wrists and ankles.
Sizes: S - 5X
Case Pack: 3
Case Weight: 15 lbs.



Tychem® TK150
Level B Coverall
Coverall, hood, elastic face, elastic wrists, attached boots.
Sizes: S - 5X
Case Pack: 3
Case Weight: 16 lbs.



Tychem® TK450
Encapsulated Suit
Encapsulated suit (Level B), rear entry, expanded back, 48" zipper, storm flap, 20 mil PVC faceshield, elastic wrists, 2 exhaust ports with shroud, attached sock boots with boot flaps.
Sizes: S - 5X
Case Pack: 1
Case Weight: 5 lbs.
Also available as front entry suit, style TK440.



Tychem® TK165
Level B Coverall
Coverall, **respirator fit hood,** double storm flap with hook and loop closure, elastic face and wrists, attached boots with boot flaps.
Sizes: S - 5X
Case Pack: 3
Case Weight: 8 lbs.



Tychem® TK250
Jacket, collar, zipper, elastic wrists, double storm flap with hook and loop closure.
Sizes: S - 5X
Case Pack: 6
Case Weight: 12 lbs.



Tychem® TK300
Pants, elastic waist, hemmed cuffs.
Sizes: S - 5X
Case Pack: 6
Case Weight: 12 lbs.



Tychem® TK320
Bib pants with suspenders, hemmed cuffs.
Sizes: S - 5X
Case Pack: 6
Case Weight: 15 lbs.

Tychem® TK260
Jacket, drawstring hood, zipper, elastic wrists, double storm flap with hook and loop closure.
Sizes: S - 5X
Case Pack: 6
Case Weight: 12 lbs.





Quick Disconnect Assembly for Gloves Option G7
Replacing the gloves on your encapsulated suit is a snap with this quick disconnect assembly. Twist off-twist on action makes for easy removal and installation. Outer replacement assemblies available.



One Glove System
The ONEGlove® system consists of a Hazmat glove which has a Kevlar® outer glove, Nomex® inner glove, and a Fluoropolymer barrier film.



Hook and Loop Closure Boot Flap Option B1
Get your boots on and off easier with this hook and loop closure feature. After donning chemical boots, simply press the hook and loop closure together and you are ready to roll!



LEVEL A/NFPA Test Kit

Maintain your encapsulated suits with this easy to use test kit. Kit features an easy-to-read Magnehelic pressure gauge, digital timer, sturdy brass and steel fittings, hoses and connectors in a waterproof case. Complete instructions included.

Part No. 00010 – Level A Test Kit
Part No. 00011 – NFPA Test Kit
Part No. 00013 – Twist Lock valve fitting
Part No. 00015 – Adaptor for test kit to test DuPont Level A Suits
Part No. 00017 – Adapters for DuPont test kit to test Lakeland suits.
Part No. 00200 – Universal test kit for DuPont, Lakeland, and Kapler Level A and NFPA Certified suits. Features an integrated blower for suit inflation.

OPTIONS FOR LEVEL A AND B CHEMICAL SUITS

Style	Description
A1	Add 1 side air tube
B1	Add hook and loop to boot flaps
B2	Add boot flaps
F1	Add 10 mil Teflon® faceshield
F3	Add 20 mil PVC faceshield
F4	Add 40 mil PVC faceshield
G5	Seal-tight glove system
G6	North Silvershield® gloves heat sealed to suit
G7	Quick disconnect assembly for gloves
G8	Replacement quick disconnect outer glove assembly, Butyl® (per pair)
G9	Replacement quick disconnect outer glove assembly, Viton® (per pair)
GA	Glove O-ring and clamp assembly
I1	Inspect, retest and recertify Level A suit*
I2	Install customer supplied pass-thru
N1	Add reflective numbers or letters to suit (4 max) each
P1	Scott® pass-thru with Hanson® fittings
P2	Scott ® pass-thru (not NIOSH approved)
P4	Survivair® pass-thru with Hanson® fittings
P6	Draegar pass-thru with Hanson® fittings
P7	Draegar pass-thru with Foster® fittings
P8	Draegar pass-thru with Snap Tite® fittings
P9	MSA Dual Purpose® pass-thru with Hanson® fittings
P10	MSA Quick Fill® pass-thru
P13	North pass-thru with snap fittings
P14	North pass-thru with Hanson® fittings
P17	MSA Dual Purpose pass-thru with brass Foster fittings
P18	MSA Wall-thru unit
R2	Reinforce crotch and elbows
R3	Reinforce crotch
R4	Reinforce elbows
R5	Reinforce knees
S1	Add sleeve guards
S2	Add double storm flap with hook and loop closure
S3	Add double storm flap with snaps
V1	Add 1 exhaust valve with cover
V2	Add 2 exhaust valves with covers
Z1	Invert zipper on Level A

ACCESSORIES FOR LEVEL A AND B CHEMICAL SUITS

Style	Description
	Gloves
00001	PVC glove ring
00020	25 mil Butyl gloves
00021	Viton® gloves
00024	17 mil Butyl glove
00025	North Silvershield® gloves
00027	Kevlar® knit gloves
	Boot Covers and Boots
00045	Onguard EZ Fit Hazmax® boots (NFPA Certified)
	Cooling Vest
00055	Phase Change® Vest, poly cotton outershell
00056	Phase Change® Vest, Banox® (FR Cotton) outershell
00057	Set of 4 Phase Change® inserts
00058	Phase Change® Vest, Nomex® outershell
	Storage Bags
00750	Level A storage bag
00760	Lakeland Utility Bag (Small)
00770	Lakeland Utility Bag (Large)
	Valves
00014	Exhaust Valve

NFPA 1991 Certified Garments

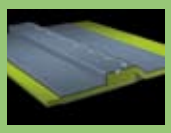
NFPA 1991 is the Standard on Vapor Protective Ensembles for Hazardous Materials Emergencies.

Lakeland's NFPA 1991 certified ensemble passes the optional Limited Chemical Flash Fire Protection for Escape and optional Liquefied Gas Protection

Now available in wide-view lens system!



NFPA 1991 certified to current edition.



Heat Sealed Seams Plus



Tychem® TK 645 NFPA 1991 Ensemble
Fully encapsulated front entry vapor-protective suit (Level A), expanded back, sealed seam plus inside and out, 48" zipper, double storm flap with hook and loop closure, 2 layer faceshield (10 mil Teflon®/40 mil PVC), One Glove® System, 3 exhaust valves, attached sock boots with boot flaps, 1.5" waist belt with 3 belt loops sewn (inside) and sealed. Includes aluminized fiberglass overcover. Storage bag and Bata Hazmax® boots included. .
Sizes: S - 5X
Case Pack: 1
Case Weight: 30 lbs.

Also available in rear entry Style TK655
Wide-View Front Entry Part Number TK645W
Wide-View Rear Entry Part Number TK655W

Phase Change

COOL VEST®

by Lakeland Industries



Adjustable straps make a comfortable fit!





Get Comfortable with a Phase Change Cool Vest® from Lakeland Industries

Working in HazMat/Protective suits can make anyone lose their cool. The Phase Change Cool Vests® worn under these suits give the user a greater degree of comfort. In fact, it creates a climate of 58° F. /14° C for up to three hours (depending on work environment).

How Do They Work?

These vests create a cooling energy from a unique Phase Change Material that is mechanically sealed in durable inserts. After freezing the inserts in ice water or a refrigerator for just 30 minutes, the vests deliver the constant cool temperature.

Unlike frozen water or gel products, our Phase Change Material maintains a consistent temperature of 58° F. /14° C during its transition from a solid to a liquid. This ensures that the wearer receives a constant cooling temperature throughout the entire two to three hour period.

Safe and Effective

At Lakeland Industries, we are very concerned about the materials we use in our products. Our Phase Change Material is made of a proprietary blend of alkanes with unique thermal properties. The inserts are non-toxic and non-flammable and can be used over and over again. To achieve continuous cooling, additional insert sets are available so the user can rotate each set.

Comfort is Key

Designed for comfort, these vests are washable and lightweight. The built-in side and shoulder adjustments provide a better fit. To suit a variety of users, the vests come in many styles, sizes and fabrics, including polycotton and Nomex®.

If you want a safe and effective way to keep your workers cool, get the Phase Change Cool Vest®, available at Lakeland.

Style 00055 – Polycotton Cool Vest®

Style 00058 – Nomex® Cool Vest®

Style 00056 – Banox (FR Cotton)

Style 00057 – Set of 4 Cool Vest replacement inserts





Tychem® TK648W NFPA 1994 Class 2 Ensemble
Fully encapsulated front entry vapor-protective suit (Level A), expanded back, sealed seam plus inside and out, 48" gas tight zipper, double storm flap with hook and loop closure, 2 layer **wide-view** faceshield (10 mil Teflon®/40mil PVC), One Glove System, 3 exhaust valves, attached sock boots with Silvershield® boot flaps, 1.5" waist belt with 3 loops sewn (inside) and sealed. Storage bag included.
Sizes: S-5X
Case Pack: 1
Case Weight: 10 lbs.
Must be worn with NFPA Certified boots.

NFPA 1994 Certified Garments

NFPA 1994, 2007 edition is the "Standard on Protective Ensembles for First Responders to CBRN Terrorism Incidents".

Unlike NFPA 1991 certified ensembles, NFPA 1994, Class 2 ensembles are not designed for the rigors of hazardous materials emergency response as they lack the abrasion/flash-fire, aluminized over cover. Lakeland's NFPA 1994, Class 2 certified ensemble employs an encapsulating design to provide protection from vapors and gases. These ensembles are designed to provide limited protection to responders at terrorism incidents where liquid and/or vapors are at or above immediately dangerous to life and health (IDLH) levels. These ensembles require the use of self-contained breathing apparatus (SCBA).



Also available in standard lens, part number TK648 or TK658.

NFPA 1992 Certified Garments

NFPA 1992 is the “Standard on Liquid-Splash-Protective Ensembles and Clothing for Hazardous Materials Emergencies”. This standard is specified in InterAgency Board’s (IAB) Standard Equipment List (SEL) and the Department of Homeland Security’s (DHS) Authorized Equipment List (AEL) for emergency repsonders. These listings allow the use of DHS grant money for the purchase of these ensembles

Unlike NFPA 1991 certified ensembles, NFPA 1992 ensembles are not required to be vapor tight. These encapsulating designs are not intended for protection from vapors or gases. NFPA 1992 certified ensembles are intended for liquid splash protective only.

This suit is certified to the NFPA 1992, 2005 edition. NFPA 1992, 2005 edition is the "standard on Liquid Splash Protective Ensembles and Clothing for Hazardous Materials Emergencies. Lakeland's NFPA 1992 ChemMAX® 3 coverall has a respirator fit hood, double strap flap with hook and look closure, and attached boots with boot flaps.



ChemMAX® 3 Suit Style C3T165N
NFPA 1992, 2007 edition

Coverall, attached respirator-fit hood, double storm flap with hook and loop closure, elastic face and wrists, attached boots with boot flaps, sealed seams. The garment shall be certified to the NFPA 1992, 2007 edition.
Sizes: S-5X
Case Pack: 1
Case Weight: 10 lbs.
Must be worn with NFPA Certified boots.

Warranty Information

It is the responsibility of the user to select garments which are appropriate for each intended use and which meet all specified government and industry standards.

Lakeland chemical protective garments are designed for limited use. It is the responsibility of the wearer to inspect garments periodically to ensure that all components, including fabric, valves, visors, gloves, zippers, seams, and interfaces are in good working condition, and provide adequate protection for the operation and chemicals to be encountered. Failure to fully inspect garments may result in serious injury or death to the wearer. Never wear garments that have not been fully inspected and pressure tested prior to use. Any garment which does not pass inspection should be removed from service immediately.

No expressed or implied warranties of fitness for a particular purpose or of merchantability or otherwise is made. Purchaser and all garment users shall promptly notify Lakeland Industries, Inc. of any claim, whether based on contract, negligence, strict liability or otherwise.

The sole and exclusive remedy of the purchaser and all end users and the limit of liability of Lakeland Industries, Inc. for any and all losses, injuries or damages shall be the refund of the purchase price or the replacement or repair of any product found to be defective within 90 days after the product is delivered. In no event shall Lakeland Industries, Inc. be liable for any special, incidental or consequential damages, whether in contract of in tort, arising out of any warranties, representations, instructions, or defects from any cause in connection with the garment, or the sale thereof.

Purchaser and all users are responsible for inspection and proper care of this product as described in this care and use manual and are responsible for all loss or damages from use or handling which results from conditions beyond the control of the manufacturer.

Product safety information is available upon request. This information corresponds to our current knowledge on the subject. It is offered solely to provide possible suggestions for your own experimentations. It is not intended, however, to substitute for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purposes. It is the user's responsibility to determine the level of risk and the proper protective equipment needed for the user's particular purposes. This information may be subject to revision as new knowledge and experience becomes available. Since we cannot anticipate all variations in actual end-use conditions, **LAKELAND INDUSTRIES, INC. MAKES NO WARRANTIES AND ASSUMES NO LIABILITY IN CONNECTION WITH ANY USE OF THIS INFORMATION**. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent right

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Warnings and Limitations

This ensemble is not suitable for use in all situations and environments with all chemical and hazardous materials. All decisions regarding the choice and usage of chemical protective clothing must be done by trained and qualified safety professionals. It is the user's responsibility to determine the level of exposure and the proper personal protective equipment needed.

Lakeland chemical protective ensembles that are certified to NFPA 1991 require an over-cover. The protective over-cover provides additional protection against abrasion, cut, tear or puncture, and direct flame impingement. (All NFPA compliant Tychem® ensembles utilize specific, multiple glove combinations and specific boots. All components of the specified ensemble must be worn to be compliant with the requirements of this standard.)

Lakeland chemical protective garments will burn. These garments should not be worn around heat, open flames, sparks or any other possible ignition source nor in potentially explosive or flammable environments.

If the Lakeland chemical protective garment is abraded, cut, torn, punctured or otherwise and in any way breached, do not use. The chemical protective garment material has finite resistance to abrasion, cut, tear and puncture.

If the Lakeland chemical protective garment is damaged during use, retreat immediately to a safe environment, thoroughly decontaminate the garment, then dispose of it in a safe manner.

Limitations of Use

This ensemble is not intended for protection against radiological hazards.

This ensemble is not intended for protection from cryogenic liquids and gases (colder than -200° C). If there is a risk of exposure to liquefied gases warmer than -100° C, the use of an ensemble certified to the optional liquefied gas requirements of NFPA 1991 (2005 edition) should be considered. Note: It may be essential to protect the wearer from thermal transfer-related physical harm, such as frostbite, by providing the wearer with insulating undergarments.

If the danger of exposure to biological aerosols or chemical warfare chemicals exists, the use of a protective ensemble certified to the optional Chemical and Biological Terrorism requirements of NFPA 1991 (2005 Edition) or garments certified to Class 2 of NFPA 1994 should be considered. Each of these standards provides different levels of performance.

Chemical Permeation Data

Before using a protective ensemble in a chemical situation, consult the chemical permeation data appropriate to the garment material. Note that seams, visors and closures will generally have lower or different permeation times than the garments' material. This information is to be used as a guide only. The permeation performance of any material depends on a number of factors including chemical concentration, temperature, time and amount of exposure. Due to the large number of variables, it is impossible for all ensemble materials to be tested against all chemicals, all combinations or mixtures, and all temperatures at which the chemical might be encountered.

Chemical permeation tests are performed under laboratory conditions -- not actual workplace conditions. They address chemical breakthrough characteristics and do not account for physical performance characteristics that affect a barrier such as abrasion, flex fatigue, puncture, tear, oxidative degradation, or degraded performance due to previous contamination.

No single protective material will protect against all chemicals for all situations. The best course of action is to test the primary protective garment materials against the specific chemical hazard, at the temperature and in the concentrations to be encountered. Lakeland Industries, Inc. will provide free swatches of primary garment materials for testing and can provide you with a list of testing facilities.

Never Use Pure Oxygen

The use of 100% oxygen in this chemical protective ensemble presents serious fire safety and health hazards. Use only breathing quality, compressed air, air line supplied breathing air, or a rebreather system. Note that some rebreather systems utilize small oxygen cylinders, but these do not create enriched oxygen atmosphere.

Manage and Prevent Heat Stress

This garment interferes with the natural regulation of body temperature. This can lead to a rise in core body temperature and heat stress. The wearer should be aware of the symptoms and treatment of heat stress. The wearer can take several steps to limit and/or prevent heat stress, such as the use of a cooling system, and implementing a conservative work/rest schedule.

The maximum time the ensemble can be worn depends on such variables as the air supply, ambient condition, climate inside the ensemble, physical and psychological condition of the wearer, work rate and work load. The TLVTM pocket guide from the American Conference of Governmental Industrial

Hygienists (ACGIH, Cincinnati) provides corrected heat stress limits for totally encapsulating garments. Similar information is available on the federal OSHA web site (www.OSHA.gov) . The WBGT correction factor for chemical protective garments is at least 10° C or higher for totally encapsulating garments.

Wearers Must be Physically Fit

Ensembles should only be worn by persons who are in good physical condition. Working in chemical protective clothing is strenuous. In an emergency situation or hot environment, the wearer may experience heat stress. Persons who show symptoms of heat stress such as nausea, dizziness, high heart rates, or excessive heat build-up should leave the work area immediately and remove the ensemble as quickly as possible after decontamination. Persons in doubt about their physical condition should check with a physician before wearing chemical protective ensembles.

Always Use the Buddy System

Never enter a contaminated area alone. A minimum of two people should enter contaminated areas together. Two additional people, in equally protective garments should be available to affect rescue of the entry team. All persons entering the contaminated area should wear appropriate protective equipment.

Static Electricity

Under certain conditions, such as cold and dry weather, it is possible that garments might build and discharge static electricity. Discharges are not normally dangerous except in situations where the generation of an electrical spark could ignite a flammable atmosphere or startle the wearer. When operating around flammable chemicals, steps to eliminate potential static discharges should be used. In these situations, steps have been recommended such as, but not limited to, water spray, the use of an over-cover, raising humidity level of the work area, use of a commercial, anti-static application coating, grounding straps on equipment and personnel, inherently static-dissipating under- and over-garments, and testing of the worker's static dissipation before entry into the classified area.

However, in the case of explosive or flammable atmospheres, even if sophisticated and elaborate steps are taken to manage static formation and dissipate static charge, the risk of severe injury remains if an uncontrolled or accidental ignition occurs. Lakeland chemical protective garments should not be worn in potentially flammable or explosive atmospheres.

Sock Booties

The socks attached to chemical protective garments are designed to be worn inside outer boots. These sock boots do not have sufficient durability or slip resistance to be worn as outer boots.

Avoid Exothermic Reactions

Certain chemicals produce a large amount of heat when they react with water. If garments are heavily contaminated with a water-reactive chemical, there is a possibility that the garment may be damaged during field decontamination from the high reactive heat. The excess chemical may have to be removed with dry sand or non-reactive absorbent before water decontamination.

Avoid Continuous Exposure

This ensemble should not be immersed in chemicals. This ensemble should not be exposed to continuous hazardous liquid chemical splash or deluge. Do not wade through liquid pools of hazardous chemicals if it is not necessary. Direct, liquid chemical exposure to the ensemble should be as limited as possible. If exposed to direct splash or a deluge of hazardous chemicals, leave the area immediately and decontaminate.

Supplied Air Line Applications

To connect to an external supplied air-line system, encapsulating garments must be equipped with the appropriate, NIOSH approved garment pass-through. This passthrough connection should not be relied upon as an anchor for a tether. Excess pull on this fitting may result in permanent damage to the garment.

Avoid Suffocation

Do not attempt to wear a totally-encapsulating, chemical protective garment without supplied fresh air. This applies to vapor-protective (Level A) and totallyencapsulating (Level B) garments. Air may be supplied to the wearer by a selfcontained breathing apparatus (SCBA), supplied breathing air line, or rebreather system.

Air-purifying respirators (APR) cannot be worn with totally-encapsulating vapor protective (Level A) or liquid protective (Level B) ensembles.

Air-purifying respirators (APR) cannot be worn under separate protective hoods that extend below the clavicle.

Powered air-purifying respirators (PAPR) cannot be worn with totally encapsulating vapor protective (Level A) or liquid protective (Level B) ensembles. PAPR's can be worn with ensembles utilizing separate hoods, if the configuration provides adequate ventilation at the intake of the unit and the unit is adequately protected from contamination.

Provide Hearing Protection

If noise levels inside this ensemble exceed regulatory noise levels, hearing protection must be provided. Use hearing protection recommended by a safety professional which does not interfere with the operation or use of the garment.

Communications

A chemical protective garment hampers communication. The use of a personal communication system should be considered. Users should also consider the use of hand signals to communicate during training, work, and for emergency situations where respirators and chemical protective garments are worn.

Positive Pressure

Excessive, internal positive pressure can damage this vapor-protective garments. Do not inflate the vapor-protective garments above a pressure of 7 inches water column.

Safety Considerations

Be sure to read and follow the information in this manual and all applicable federal, state and local occupation safety and health statutes. Serious injury or death may occur from improper use of this garment. Proper use must be consistent with NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and 29 CFR 1910.132.

This garment is not suitable for use in all situations and environments with all chemical and hazardous materials. All decisions regarding the choice of chemical protective clothing and its use must be made by trained and qualified safety professionals. It is the user's responsibility to determine the level of exposure and the proper personal protective equipment (PPE) needed. Most performance properties cannot be tested by the users in the field. Refer to the Lakeland Permeation Guide for chemicals specific to your situation.

If any of the following symptoms develop during use of this garment, immediately leave the contaminated area, undergo field decontamination (if exposed), and doff the garment:

- Fever
- Difficulty breathing
- Nausea
- Excessive Tiredness
- Dizziness
- Numbness
- Any unusual odor or taste
- Eye or skin irritation
- Narrowing or dimming of vision
- Claustrophobia
- Loss of balance or orientation

Wearer Qualifications

This garment should be worn only by persons who are properly trained in the usage of this garment and who are in good physical condition to perform tasks involving the use of this garment. Consult a physician before donning a suit to ensure you are capable of wearing this garment under the expected work conditions and environment.

Additional Equipment

To help protect the wearer and to perform as intended, this chemical protective garment must be worn with several additional items of personal protective equipment (PPE). At a minimum the following components must be worn with the enclosed chemical protective garment:

NFPA Compliant Garments (NFPA 1991 and NFPA 1994, Class 2)

- Separate, user-supplied, full-face respiratory protection such as: 1) an open circuit, self-contained breathing apparatus (SCBA) which is also certified as compliant with NFPA 1981 Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire Service, 2) an external breathing air supply (air line system with pass-through and escape bottle) or 3) a closed-circuit, self-contained breathing apparatus (rebreather).

  Air-purifying respirators (APR) cannot be worn with totally-encapsulating vapor protective (Level A) or liquid protective (Level B) ensembles nor with

NFPA 1994, Class 2 ensembles with separate protective hoods that extend below the clavicle.

Powered air-purifying respirators (PAPR) cannot be worn with totally encapsulating vapor protective (Level A) or liquid protective (Level B) garments. PAPR's can be worn with NFPA 1994, Class 2 ensembles utilizing separate hoods, if the configuration provides adequate ventilation at the intake of the unit and the unit is adequately protected from contamination.

The next updates to these NFPA standards will most likely require NIOSHcertified, CBRNE (chemical, biological, radiological, nuclear, explosive) respirators.

- NFPA 1991 compliant Lakeland chemical protective ensembles must incorporate a separate over-cover to provide required abrasion resistance, puncture resistance, and protection from direct flame impingement. An overcover should be considered for NFPA 1994, Class 2 garments where there is a risk of abrasion, puncture, cut, tear or flame impingement.
- Separate, user-supplied protective footwear specified in the Technical Data Package of this document. NFPA compliant Lakeland chemical protective garments include attached socks made of garment material. These socks must be worn inside the protective footwear. These socks are not suitable as outer footwear.
- NFPA compliant Lakeland chemical protective garments are equipped with outer boot covers to prevent liquid pooling inside the boot. After the garment is donned, the boots are donned and the outer cover is pulled down over the upper portion of the boot.
- NFPA compliant Lakeland chemical protective garments include attached chemical protective gloves. Separate, cut-resistant outer gloves are required on NFPA 1991 compliant garments. (Additional cut resistant outer gloves are not required for garments compliant with NFPA 1994, Class 2, but should be considered if a high level of cut protection is required.)

  NFPA compliant garments utilize multiple chemical resistant gloves to achieve the chemical barrier and physical performance requirements of the standard. All chemical gloves must be present in compliant ensembles. It is the user's responsibility to verify that the glove will provide adequate barrier and physical performance for the intended task.
- User-supplied head protection.

Non-Compliant Garments (Level A and Liquid-Splash Protective)

- Separate, user-supplied, full-face respiratory protection such as: 1) an open circuit, self-contained breathing apparatus (SCBA), 2) an external breathing air supply (air line system with garment pass-through and escape bottle) or 3) a closed-circuit, self-contained breathing apparatus (rebreather).

  Air-purifying respirators (APR) cannot be worn with totally-encapsulating vapor protective (Level A) or liquid protective (Level B) ensembles. Air-purifying respirators (APR) can be worn under protective hoods that extend below the clavicle.

  Powered air-purifying respirators (PAPR) cannot be worn with totally encapsulating vapor protective (Level A) or liquid protective (Level B) garments. PAPR's can be worn under separate protective hoods, if the configuration provides adequate ventilation at the intake of the unit and the unit is adequately protected from contamination.
- Separate, user-supplied, protective footwear. Many, but not all, Lakeland chemical protective garments have socks made of garment material. These socks must be worn inside the protective footwear. These socks are not suitable as outer footwear.
- These garments may also be equipped with outer boot covers to prevent liquid pooling inside the boot. After the garment is donned, the boots are donned and the outer cover is pulled down over the upper portion of the boot.

  The cuffs of Lakeland chemical protective garments that do not have socks should be worn over the upper portion of the user's boot to prevent run-off and pooling of liquid within the boot. Adhesive taping of the garment cuff to the boot does not provide a leakproof seal. Taping should only be used to hold the garment cuff in position over the boot. If a leak-proof seal is required, then garments with sock and boot covers should be selected.
- The use of footwear with toe crush protection, cut-resistant, and slip-resistant soles is recommended.
- The use of separate cut-resistant gloves may also be considered.
- Level A, vapor-protective Lakeland chemical protective garments are provided with attached chemical protective gloves. A separate, outer, cut-resistant glove should be considered if a high level of cut protection is required.

  Liquid-protective Lakeland chemical protective garments may or may not be equipped with attached chemical protective gloves. If not attached, user-supplied chemical protective gloves should be worn with the sleeve of the garment over the gauntlet of the glove. Adhesive taping of the glove to sleeve interface does not provide a leakproof seal. Taping should only be used to hold the sleeve in position over the glove gauntlet. If a leak-proof seal between the glove and sleeve is required, then a garment with attached gloves should be selected.

  Some Lakeland chemical protective garments utilize multiple chemical-resistant gloves to achieve the chemical barrier and physical performance requirements. Removal of one of the glove layers may compromise chemical barrier or glove durability.

  It is the user's responsibility to verify that the glove and the glove/sleeve interface will provide adequate barrier and physical performance for the intended task.
- User-supplied head protection.

Additional personal protective equipment may be required. Consult with a trained and experienced safety professional to determine the additional PPE components required for your specific situation.

- Hearing protection may be required due to high levels of external noise or high noise levels generated by supplied air systems.
- Other protective equipment may be warranted based on the situation to deal with additional hazards which may include, but are not limited to:

  Flammable or Explosive Environment

  Decontamination

  Extreme Heat (Heat Stress)

  Extreme Cold (Hypothermia)

  Asphyxiating Atmosphere

  Physical Hazards (Sharps, Puncture, Rough Surfaces, Falling Debris)

  Slipping or falling

  Visibility - of wearer & by wearer

  Communications

Inspection of Garment

Lakeland Chemical Potective Garment Inspection

Lakeland chemical protective garments should be inspected at the following times:

1. Upon receipt from manufacturer (To ensure no damage occurred during shipping.)
2. After the garment is worn and before the garment is worn again. Contaminated or damaged garments should not be re-used.
3. Annually.

Garment inspection is important. It ensures that the integrity of the garment has been maintained. The first inspection should be performed upon receipt to ensure that the integrity was not compromised during transit. This inspection should be done immediately upon receipt in order to fall within the warranty period. An inspection must also be performed before wearing. Contaminated or damaged Lakeland chemical protective garments should not be re-used. Annual follow-up inspection is recommended for garments in storage.

Inspection of garments should include the following steps:

1. Lay the garment on a clean, smooth surface.
2. Use a flashlight inside and examine the outside of the garment for holes, cuts, or tears. Note: Apparent stitch holes covered by seam sealing tape do not constitute a defect.
3. Examine the seam tape for lifts or inadequate seal.
4. Examine the garment material and seams for signs of damage. Fabrics and seams sometimes have visual blemishes that do not affect barrier performance. Such blemishes can include dullness or white frosted areas adjacent to the seam tape. A breach or rupture of the barrier film is cause for rejection.

   Tincture of Iodine is used to confirm a physical breach. Apply Tincture of Iodine to the suspect area and wipe off the excess with a dry towel. If a dark brown stain remains, the barrier layer has been breached and the garment should be rejected. Areas immediately adjacent to the seam tape may take a slight yellow stain as a result of heat exposure during manufacture. This slight yellow stain is not a defect. The edges of the seam tape may also develop a thin, but prominent staining of the exposed edge. This is not a defect.
5. Examine the visor (if present) for a tight seal and make sure the visor offers clear vision.

6. Examine the garment air distribution system (if present) to make sure that it is connected properly and appears to be in working order.
7. Examine the garment gloves (if present) to make sure they are in good working order.
8. Examine the interface between the gloves and the garment if gloves are attached to the garment.
9. Examine the interface between the boots and the garment if the boots are attached to the garment.
10. Examine the garment zipper and zipper cover to make sure they are in good working order. Lubricate the zipper using a small amount of paraffin wax.
11. Examine the garment exhalation valves (if present) to make sure they are not obstructed and are in good working order.
12. Examine all garment snaps, closures, adjustment straps and options to make sure they are not obstructed and are in good working order.
13. Examine garment-warning label(s) to make sure they are firmly attached and can be read easily.
14. Vapor protective Level A garments and NFPA 1991 and NFPA 1994, Class 2 compliant garments should be checked for pressure integrity during each garment inspection.

Pressure Testing Vapor Protective Level A Garments

The purpose of the air-inflation test is to test the integrity of the Lakeland chemical protective vapor-protective garments fitted with exhaust values.

The steps in this procedure are similar to those found in ASTM F1052-97 "Standard Test Method for Pressure Testing Vapor Protective Ensembles". A copy of the standard may be obtained for a fee from ASTM (www.ASTM.org) or by calling (610) 832-9585.

The procedure below assumes the use of the Lakeland Pressure Test Kit (P/N 00010). The pressure test kit consists of:

- Unit with pressure gauge and timer
- Exhaust valve adapters
- Hoses which attach the valve fittings to the pressure test kit
- Plugs to block extra valves in NFPA 1991 certified ensembles

Users of other pressure test kits will have to modify the steps by which they attach the test kit to the garment.

Note: *Air and garment temperature can affect the results of this test. If the temperature of the garment, the air outside the garment, or the air inside the garment changes during the test, an incorrect result may be obtained. Avoid circumstances that will heat or cool the garment during the test, such as conducting the test in the presence of drafts, under air conditioning ducts, or in the presence of direct sunlight.*

Conduct the inflation test as follows:

1. Place the vapor-protective garment on a clean, smooth surface.
2. If the garment utilizes a snap to secure the exhaust valve pocket, unsnap and unfold that pocket cover.
3. Remove the outer cover of the exhaust valve body.
3. Visually inspect the exhaust valve body of each exhaust valve for visible cracks.
4. Remove diaphragm from one exhaust valve body, insert the air outlet fitting into the valve body and gently twist the fitting to lock it in place.
5. Remove the diaphragm from the second exhaust valve, insert the air outlet fitting into the valve body and gently twist the fitting to lock it in place.

   Ensembles certified to NFPA 1991 and NFPA 1994, Class 2 have additional exhaust valves. The extra valves in the Lakeland chemical protective ensembles can be blocked with the plugs provided in the test kit.

   6. Locate and connect the test kit to a power source. Open the valve and engage the blower motor. When the pressure gauge indicates 5 inches of water, close the valve and turn the blower off. Excessive, internal positive pressure can damage this garment. Do not inflate the garment above a pressure of 7 inches water column.
7. Wait at least 1 minute and reduce the air pressure to 4 inches of water. Set and start the timer. Read the pressure after 4 minutes. Note the test result and record the ending pressure on the inspection log. The garment is considered to "pass" if the pressure remains at or above 3.2 inches (80%) during these 4 minutes.
8. After the pressure test is completed, remove the fitting from each exhaust valve.
9. Re-install the diaphragm into each valve body.
10. Visually inspect each exhaust valve diaphragm to ensure it is properly sealed and not torn. Be sure that all exhaust valve diaphragms are installed to enable the air to flow out of the suit.
11. Re-install the exhaust valve outer cover on the valve body.

Repairing the Garment

If a garment fails a visual inspection or pressure test upon receipt, contact Lakeland Industries, inc. at 1-800-645-9291 to determine if the garment can be returned for inspection or repair. Note: Charges may be incurred. See warranty information.

Contaminated garments will not be accepted for repair. Discoloration or odors are evidence of contamination. Garments being returned for repairs must be accompanied by the usage log and a letter stating that the garments are not contaminated.

Storage

Storage Life

Lakeland chemical protective garments may contain materials, including gloves, closures and exhaust valves for which there is no specific storage life data available. It is suggested that garments be labeled and retired to "Training Use Only" after 5 years. Garments may be used as long as they pass a full visual inspection. In addition to the visual inspection, Level A garments should also pass the ASTM F1052 inflation test.

Uncontaminated garments that do not pass a visual inspection (Level A garments should also pass the inflation test) should be retired and labeled "For Training Use Only" or be discarded.

Optimum Storage Conditions

Preferably, garments should be stored in a cool, dark, dry location free of dirt and insects. Sunlight, ozone, high temperatures (>120° F), vehicle exhaust fumes, compression under heavy weights and sharp edges or projections are some conditions known to degrade the materials in these ensembles. Garments should be stored in boxes, in bags or on hangers.

Never step on chemical protective garments. Never place or store heavy objects on top of chemical garments.

Visor Antifog Procedures

Condensation may cause visor to fog. Commercially available anti-fog wipes can be used to clean and treat the internal lens. Follow the manufacturers instructions for application.

Closure Lubricants

No additional lubrication of the closure is suggested. If the zipper is difficult to operate, it can be lubricated lightly on the outer and inner components with paraffin (wax). After lubrication, the zipper should be closed and opened a number of times to assure that all excess lubricant has been removed.

Suggested Undergarments

This garment is designed and sized to be worn over standard work clothing. Thick, bulky clothing worn under this garment will affect the fit of the garment and limit the movement of the wearer.

Sizing Considerations

The Lakeland chemical protective clothing sizing chart should be used to determine accurate fit. The correct size garment should be worn. Users should verify sizing by donning the correct size garment and performing a series of exercises to simulate movements that may be required under actual usage conditions. These sizing tests should include outer boots, head protection and, if used, radio equipment and other accessories the wearer may carry during actual use. Such exercises may include:

- read the SCBA gauge
- pick up a box, carry it and set the box down in a separate location
- pick up a wrench from the ground
- open the garment closure
- climb up and down stairs and ladder
- adjust respirator face piece straps
- remove the SCBA without dislodging the full face respirator
- remove and refit full face respirator
- send and receive radio transmissions
- communicate with co-worker wearing the same type of garment and additional equipment

Wearers of vapor-protective garments and totally encapsulating liquid-protective garments may also want to consider a test to remove one hand or both hands from the gloves and wipe the face shield.

Donning the Garment

The wearer should be helped by a second person in donning and doffing a chemical protective ensemble. A ground cloth should be used to avoid contamination and damage to the garment. A chair free of sharp edges and projections should also be utilized.

Totally-encapsulating Vapor Protective (Level A) and Liquid Protective (Level B) Garments

1. Conduct a visual inspection of the garment before you begin donning:
   - garment should be free of discoloration or physical damage
   - inner gloves should be fully inserted into outer gloves
   - inside and outside of exhaust values should be free of caps and plugs
2. Remove all jewelry and personal items (pens, key rings, badges, pagers, knife cases, etc.) that might damage the garment.
3. Check function of respirator and place near donning location.
4. Visually check size and condition of outer boots and place them nearby.
5. Open garment closure completely.
6. Read garment size label to assure proper fit.
7. Apply anti-fog to inside of visor.
8. Remove shoes. If the garment has socks, these socks are worn inside additional outer chemical boots. These socks do not have adequate durability or slip resistance to be worn as the outer footwear covering.
9. An assistant should help the wearer don the garment.
10. While sitting, insert feet into garment legs and down into sock boots, if so equipped. Stretch legs out to maximum extension while pulling garment up around hips.

    If the garment is fitted with boot covers, pull boot covers up and don outer boots. Then pull the boot covers down over the boots as far as possible.
11. While standing, connect and adjust garment waist belt (if equipped) until comfortably snug.
12. While standing, with garment at waist level, don respirator harness and back piece.
13. Don respirator facepiece and check its function. To conserve SCBA air supply, disconnect the air supply from the facepiece, if possible, as long as the closure is open and the wearer has access to fresh air. In the case of an air line breathing system, complete all connections and adjustments.
14. Don protective headgear and communication equipment.
15. If not already done, connect the respirator facepiece to the air supply and make sure the respirator is functioning properly and adequate air is being provided to the wearer.
16. Place one hand in the sleeve and pull the garment sleeve to the shoulder. Make sure hand is securely inside the glove.
17. Place other hand in sleeve and glove.
18. If gloves are not attached to the garment, then don gloves. Taping should only be used to hold the sleeve in position over the glove gauntlet. Taping of the glove to sleeve interface does not provide a leak-proof seal. If a leak-proof seal between the glove and sleeve is required, then a garment with attached gloves should be selected.
19. Pull the garment over respirator backpack making sure nothing will constrict or hamper airflow.
20. Have assistant slowly close the gas-tight closure. After checking that the closure is completely closed, the flaps should be closed and sealed over the closure.

Non-encapsulating Garments

1. Conduct a visual inspection of the garment before you begin donning:
   - garment should be free of discoloration or physical damage
   - inner gloves should be fully inserted into outer gloves
2. Remove all jewelry and personal items (pens, key rings, badges, pagers, knife cases, etc.) that might damage the garment.
3. Check function of respirator and place nearby donning location.
4. Visually check size and condition of outer boots and place nearby.
5. Open garment closure completely.
6. Read garment size label to assure proper fit.
7. Apply anti-fog to inside of visor, if present.
8. Remove shoes. If the garment has attached socks, these socks are worn inside outer chemical boots. These sock boots do not have adequate durability or slip resistance to be worn as the outer footwear covering.
9. An assistant should help the wearer don the garment.
10. While sitting, insert feet into garment legs and down into sock boot, if so equipped. Stretch legs out to maximum extension while pulling garment up around hips.
11. If the garment has outer boot covers, pull the boot covers up and don outer boots. Then pull boot cover down over boots as far as possible. If the garment does not have socks, pull the garment cuff up before donning the boot, then pull the cuff down over the outside of the boot.
12. Place one hand in the sleeve and pull garment sleeve to shoulder. Make sure hand is securely inside the glove, if attached.
13. Place other hand in sleeve and glove, if attached, and pull the garment over that shoulder.
14. If gloves are not attached to the garment, pull up the sleeve, don the gloves and pull the sleeve opening over the gauntlet of the glove.

15. Don respirator facepiece and check its function. If using an SCBA, disconnect the air supply from the facepiece, if possible, to save air supply.
16. Don protective headgear, if it is worn underneath the garment hood, and communication equipment.
17. Place attached hood over the head and close zipper.
18. After checking that the zipper is completely closed, the flaps should be folded over the zipper and sealed.
19. In the case of an air-line breathing system, complete all connections and adjustments.
20. If not already done, connect the respirator facepiece to the air supply and make sure the respirator is functioning properly and adequate air is being provided to the wearer.

Doffing the Garment

Totally-encapsulating Vapor Protective (Level A) and Liquid Protective (Level B) Garments

1. If the garment has been contaminated or is suspected of being contaminated, the wearer should continue to use his respirator until the garment has been doffed and removed.
2. An assistant should help the wearer doff the garment after field decontamination. If the garment has been contaminated, the assistant should wear protective clothing and respiratory equipment.
3. While the wearer stands, the assistant should open the closure and peel the garment down and away from the wearer's shoulders. The assistant should help the wearer remove his arms from the sleeves. External air lines should be disconnected from the garment and from the wearer's respirator, while the wearer switches to his escape bottle.
4. Lower garment below the hips and sit down. Have the assistant remove the boots, pull the garment off the legs and remove the garment to a remote location.
5. Once the garment has been removed, the wearer can doff the respiratory facepiece and harness.

Non-encapsulating Garments

1. If the garment has been contaminated or is suspected of being contaminated, the wearer should continue to use his respirator until the garment has been doffed and removed.
2. An assistant should help the wearer doff the garment after field decontamination. If the garment has been contaminated, the assistant should wear protective clothing and respiratory equipment.
3. If the wearer is wearing an SCBA or PAPR, the assistant should help the wearer remove the respirator straps and rest the respirator in a safe, dry position. While the wearer stands, the assistant should remove the outer hood, then open the closure and peel the garment down and away from the wearer's shoulders. The assistant should help the wearer remove his arms from the sleeves.
4. Lower the garment below the hips and sit down. Have the assistant remove the boots, pull the garment off the legs and remove the garment to a remote location.
5. Once the garment has been removed, the wearer can disconnect and remove the respiratory facepiece and harness.

Decontamination and Cleaning

Decontamination Solutions

Do not use any oxidative, corrosive or reactive decontamination solutions with this garment. The only decontamination solutions to use with this garment are water and mild, household dishwashing liquid.

Field Decontamination

The purpose of field decontamination is to allow the wearer to doff the garment without being harmed by contaminants on the garment surface. Garments that have been exposed to or that are suspected of being exposed to hazardous chemicals should be thoroughly decontaminated in the field before doffing. Additional cleaning and decontamination, as well as a full inspection, are required before a garment may be re-used.

1. Leave the hot zone with adequate air supply for decontamination and removal of the garment. The wearer should continue to wear the respirator until the garment has been completely doffed and removed from the area.
2. If the garment has been exposed or is suspected to have been exposed, thoroughly scrub the garment using household dishwashing liquid and soft scrub brushes, followed by a thorough rinsing in water.
3. If possible, remove the excess rinse water from the garment by individuals wearing gloves, liquid-splash protective clothing and respiratory protection. At a minimum, the rinse water on and near the closure assembly should be removed.

Decontamination before Re-use

This garment is designed for limited-use applications. It is priced to make disposal after use economically justified when the effectiveness of decontamination is in question. If the garment is contaminated during use, it should be discarded.

It is the responsibility of the safety professional having jurisdiction over usage of the garment to determine whether the suit has been contaminated and can be safely reused.

Contaminated garments should be discarded and are not suitable for training.

Cleaning

Garments should be clean and dry before use. Water and mild, household dishwashing liquid should be used to clean this garment. This garment may be scrubbed with a soft brush or hand towel, thoroughly rinsed with clean, fresh water and air-dried. Do not use any oxidative, corrosive or reactive decontamination solutions with this garment. Do not dry-clean this garment. Do not use hot air or a tumbling air dryer to dry this garment. Do not use bleach.

Retirement Considerations

It is suggested this garment be retired from service if any of the following criteria are met:

- Garment fails to pass inspection.
- Vapor-protective garment fails the inflation test.
- Garment is abraded, cut, torn, punctured, or otherwise and in any way breached.
- Garment has had prolonged exposure to intense heat and/or ultraviolet light.
- Garment has been contaminated.

Retired garments that are not contaminated may be labeled and used "For Training Only". The labeling should be done with a permanent marker.

Disposal

If not contaminated, this chemical protective garment may be buried or incinerated. Because the chemical protective garment comprises several different plastics - polyolefin, polyester, and vinyl - it is not suitable for recycling. The uncontaminated chemical protective garment may be incinerated in a facility that is capable of handling mixtures containing these plastics. Likewise, an uncontaminated chemical protective garment may be buried in a facility that accepts similar plastic materials.

Over-covers may be landfilled if not contaminated.

Contaminated garments that cannot be handled safely without protective equipment may have to be disposed of with other hazardous wastes, either through incineration or burial.



Corporate Headquarters

701 Koehler Avenue
Suite 7
Ronkonkoma, NY 11779
Tel: 631-981-9700
Fax: 631-981-9751
Email: info@lakeland.com
www.lakeland.com

Lakeland Limited-Use Clothing Customer Service

202 Pride Lane SW
Decatur, AL 35603
800-645-9291
Tel: 256-584-3565
Fax: 256-350-0773

Chemical Protective Clothing Division Customer Service

800-645-9291
Tel: 256-584-3565
Fax: 256-350-3011
Email: sales@lakeland.com

Hand/Arm Protection Division Customer Service

800-886-8010
Tel: 256-351-9126
Fax: 256-353-9463

Woven Clothing Division Customer Service

2401 South West Pkwy
St. Joseph, MO 64503
800-933-0115
Tel: 816-390-8086
Fax: 816-390-8224

Fyrepel Fire Protective Clothing Customer Service

800-933-0115
Tel: 816-390-8086
Fax: 816-390-8224
Email: fyrepel@lakeland.com

Lakeland Protective Wear, Inc. Canada

59 Bury Court
Branford, Ontario N3S 089
800-489-9131 (Canada Only)
Tel: 905-634-6400
Fax: 905-634-6611
Email: canada@lakeland-ind.com

Lakeland® INDUSTRIES, INC

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