





Hazmat Suit Material Data and Sizing Information

Eagle Instruments, Inc.

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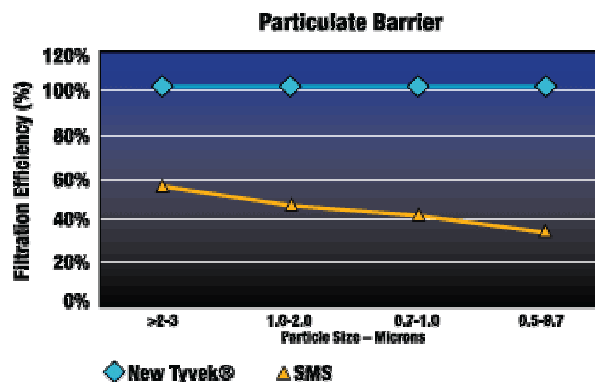


HAZMAT Protective Suits and Respirator Levels

	<p><u>Level A</u> represents the greatest danger of respiratory, eye or skin damage from hazardous vapors, gases, particulates, sudden splash, immersion or contact with hazardous materials. It calls for total encapsulation in a vapor tight chemical suit with self-contained breathing apparatus (SCBA) or supplied air and appropriate accessories.</p>
	<p><u>Level B</u> situations call for the highest degree of respiratory protection but a lesser need for skin protection. It calls for SCBA or positive pressure supplied air respirator with escape SCBA, plus hooded chemical resistant clothing (coveralls and long sleeved jacket; coveralls; one or two piece chemical-splash suit; or disposable chemical-resistant coveralls boots and gloves.</p>
<p>LEVEL C</p>	<p><u>Level C</u> is the lowest level of hazmat protection. Level "C" requires NIOSH N95 or higher level of respiratory protection but a minimal need for skin protection. It calls for half mask or full-face negative pressure respirators or powered air respirators (PAPR's). Level "C" requires use of a hooded chemical resistant suit or two piece chemical resistant suit, chemical resistant boots and gloves. Respirator must be able to remove <u>all</u> chemical and biological agents and the agent must pose <u>no splash hazard</u>.</p>

Barrier Protection for Tyvek® Level "C" Protection

Standard non-coated Tyvek material is intended for protection from exposure only to dry particulate or light splash body fluid risks. It is not intended for protection from blood borne pathogens or hazardous chemicals in a wet environment.



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Permeation Data for Tychem® QC Level “C” or “B” Suit Protection Material

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

Chemical Name	Physical Phase	Normalized Breakthrough Time (minutes)	Permeation Rate (pg/cm ² /min)
Acetone	L	Immediate	10
Acetonitrile	L	Immediate	16
Ammonia (anhydrous)	G	Immediate	3.1
1,3-Butadiene	G	8	12
Carbon Disulfide	L	Immediate	High
Chlorine Gas	G	Immediate	>50
Dichloromethane	L	Immediate	>50
Diethylamine	L	Immediate	64
N,N-Dimethylformamide	L 7	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	0.3
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
Index of Codes: ND = none detected, > = greater than, < = less 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

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Permeation Data for Tychem[®] SL (Saranex[®] 23-P Coated) Level “C” or “B” Suit Protection Material

Tychem SL[®]/Saranex[®] 23-P Permeation Data for ASTM Recommended List of Chemicals for Evaluating Protective Clothing Materials (ASTM F1001)

Chemical Name	Physical Phase	Normalized Breakthrough Time (minutes)	Permeation Rate (pg/cm ² /min)
Acetone	L	24	1.6
Acetonitrile	L	Immediate	2.8
Ammonia (anhydrous)	G	32	0.15
1,3-Butadiene	G	>480	ND
Carbon Disulfide	L	Immediate	>50
Chlorine Gas	G	>480	ND
Dichloromethane	L	Immediate	>50
Diethylamine	L	Immediate	>50
N,N-Dimethylformamide	L	109	0.8
Ethyl Acetate	L	Immediate	6.6
Ethylene Oxide	G	Immediate	8.4
n-Hexane	L	146	0.48
Hydrogen Chloride	G	>480	ND
Methanol	L	>480	ND
Methyl Chloride	G	>480	ND
Nitrobenzene	L	102	2.3
Sodium Hydroxide, 50%	L	>480	ND
Sulfuric Acid (conc.)	L	>480	ND
Tetrachloroethylene	L	Immediate	5.7
Tetrahydrofuran	L	Immediate	>50
Toluene	L	Immediate	30

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Permeation Data for Tychem® BR Level “A” and “B” Suit Protection Material

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

Chemical Name	Physical Phase	Normalized Breakthrough Time (minutes)	Permeation Rate (pg/cm ² /min)
Acetone	L	>480	ND
Acetonitrile	L	>480	ND
Ammonia (anhydrous)	G	>480	ND
1,3-Butadiene	G	>480	ND
Carbon Disulfide	L	>480	ND
Chlorine Gas	G	>480	ND
Dichloromethane	L	>480	ND
Diethylamine	L	>480	ND
N,N-Dimethylformamide	L	>480	ND
Ethyl Acetate	L	>480	ND
Ethylene Oxide	G	>480	ND
n-Hexane	L	>480	ND
Hydrogen Chloride	G	>480	ND
Methanol	L	>480	ND
Methyl Chloride	G	>480	ND
Nitrobenzene	L	>480	ND
Sodium Hydroxide, 50%	L	>480	ND
Sulfuric Acid (conc.)	L	>480	ND
Tetrachloroethylene	L	>480	ND
Tetrahydrofuran	L	>480	ND
Toluene	L	>480	ND
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Permeation Data for Tychem® TK Level “A” Suit Protection Material

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

Chemical Name	Physical Phase	Normalized Breakthrough Time (minutes)	Permeation Rate (pg/cm ² /min)
Acetone	L	>480	ND
Acetonitrile	L	>480	ND
Ammonia (anhydrous)	G	>480	ND
1,3-Butadiene	G	>480	ND
Carbon Disulfide	L	>480	ND
Chlorine Gas	G	>480	ND
Dichloromethane	L	>480	ND
Diethylamine	L	>480	ND
N,N-Dimethylformamide	L	>480	ND
Ethyl Acetate	L	>480	ND
Ethylene Oxide	G	>480	ND
n-Hexane	L	>480	ND
Hydrogen Chloride	G	>480	ND
Methanol	L	>480	ND
Methyl Chloride	G	>480	ND
Nitrobenzene	L	>480	ND
Sodium Hydroxide, 50%	L	>480	ND
Sulfuric Acid (conc.)	L	>480	ND
Tetrachloroethylene	L	>480	ND
Tetrahydrofuran	L	>480	ND
Toluene	L	>480	ND
Index of Codes: ND = none detected, > = greater than, < = less than, L = Liquid, G = Gas			

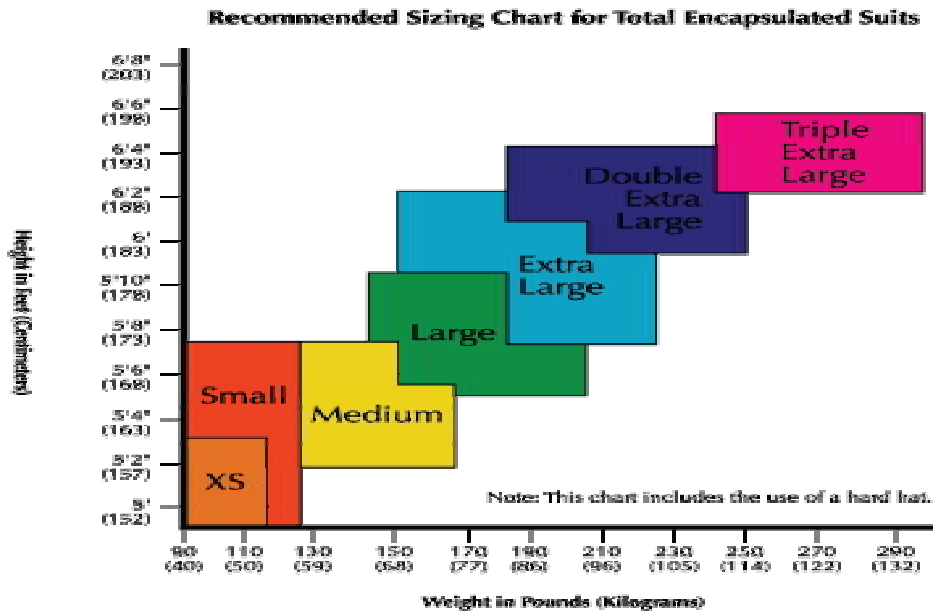
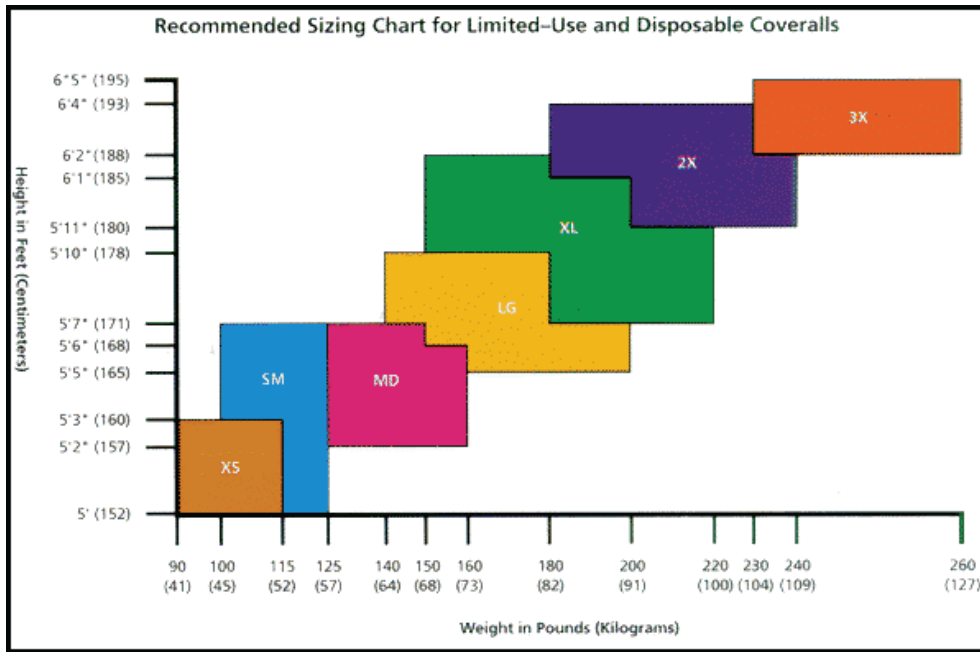
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Coverall Suit Size Chart

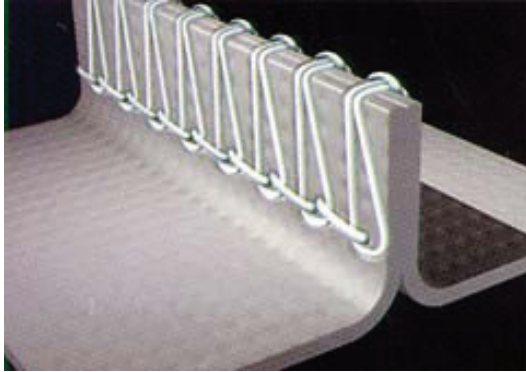


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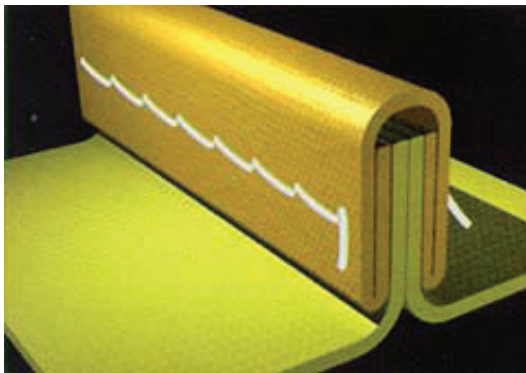


Tyvek® Coverall Suit Seam Construction



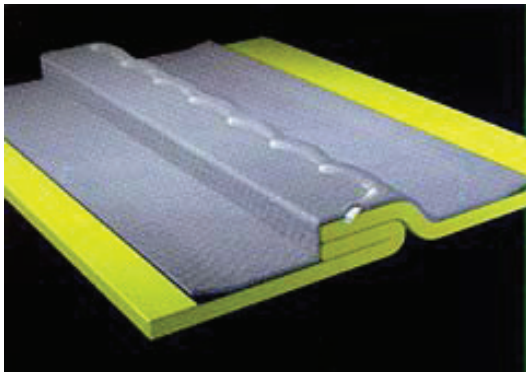
Serged (Sewn) Seam

A serged seam joins two pieces of material with a thread stitch 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 particulates are of a concern.



Sewn and Bound Seam

This 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 Seam

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.

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