



1 ONESUIT® Pro 2

USER GUIDE AND TECHNICAL MANUAL

This user information is to be removed only by the end user



Manufactured by UL for MODEL 10001 (2010) (UL)

RM61556





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PRODUCT INFORMATION

Providing maximum protection at an affordable price. Designed to meet the real-world needs of those who work in the most dangerous environments.

ONESUIT® Pro 2 offers:

- Certification to NFPA 1991
- Protection from exposure to chemical/biological agents and industrial chemicals in both liquid and vapor form
- Flame and abrasion resistance without an over-cover
- Comfort, thanks to thin, flexible CORETECH® materials
- Simplified donning and doffing
- Ease of storage and handling due to compressible design
- ONESUIT® Hazglove-91 system, offering outstanding protection with excellent dexterity
- Easy to use zipper with better flexibility
- Excellent mobility from streamlined design
- Single-layer CORETECH® Clearguard Visor with permanent anti-fog resistance and enhanced peripheral visibility
- Reusable, limited exposure design
-

SIZING

ONESUIT® Pro 2 has been sized to fit a wide range of users. Please refer to the following table to assist in finding the most appropriate size.

Note: If in-between sizes, round up to the next larger size.

Note: This data does not include a person wearing a helmet, SCBA, or any other equipment.

Product Code	Suit Size	Height (Inches)	Weight (lbs)	Standard ONESUIT® Hazglove-91 Glove Size
1S-P2-RSM	Small	60-64	100-130	8 (Medium)
1S-P2-RMD	Medium	64-68	130-180	9 (Large)
1S-P2-RLG	Large	68-72	140-210	9 (Large)
1S-P2-RXL	X-Large	72-76	180-230	10 (X-Large)
1S-P2-R2X	2X-Large	74-78	210-260	11 (2X-Large)
1S-P2-R3X	3X-Large	76-80	240-290	11 (2X-Large)

TEST DATA

ONESUIT® Pro 2 has been assessed per the requirements of NFPA 1991 (2016 Edition). Below is the applicable certification test data.

NOTE: Most performance properties of ONESUIT® Pro 2 cannot be tested by the user in the field.

CHEMICAL PERMEATION DATA*:

ONESUIT® Pro 2 – Garment Material					
Cumulative Permeation ($\mu\text{g}/\text{cm}^2$) over Test Period Interval					
Test Period Interval	0-15 min	15-30 min	30-45 min	45-60 min	1-hour total
Chemical/ Requirement	≤ 2.0	≤ 2.0	≤ 2.0	≤ 2.0	≤ 6.0
Acetone	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acetonitrile	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Acrolein	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Acrylonitrile	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Anhydrous ammonia (gas)	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
1,3-Butadiene (gas)	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Carbon disulfide	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Chlorine (gas)	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Dichloromethane	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17
Diethyl amine	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Dimethyl formamide	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
Dimethyl sulfate	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13
Ethyl acetate	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Ethylene oxide (gas)	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexane	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Hydrogen chloride (gas)	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Methanol	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
Methyl chloride (gas)	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Nitrobenzene	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07
Sodium hydroxide, 50% w/w	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Sulfuric acid, 96.1% w/w	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Tetrachloroethylene	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
Tetrahydrofuran	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
Toluene	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
Chemical Warfare Agents					
Blister Agent Requirements	≤ 1.33	≤ 1.33	≤ 1.33	≤ 1.33	≤ 4.0
Distilled Mustard	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Nerve Agent Requirements	≤ 0.40	≤ 0.40	≤ 0.40	≤ 0.40	≤ 1.25
Soman	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Optional Liquefied Gases*	≤ 6.0				
Ammonia (liquefied)	-				
Chlorine (liquefied)	-				
Ethylene oxide (liquefied)	-				

*Liquefied chemical gases are only evaluated over a 15-minute exposure period.

ONESUIT® Pro 2 – Visor Material**Cumulative Permeation ($\mu\text{g}/\text{cm}^2$) over Test Period Interval**

Test Period Interval	0-15 min	15-30 min	30-45 min	45-60 min	1-hour total
Chemical/ Requirement	≤ 2.0	≤ 2.0	≤ 2.0	≤ 2.0	≤ 6.0
Acetone	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Acetonitrile	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Acrolein	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Acrylonitrile	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Anhydrous ammonia (gas)	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
1,3-Butadiene (gas)	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Carbon disulfide	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Chlorine (gas)	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Dichloromethane	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Diethyl amine	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Dimethyl formamide	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Dimethyl sulfate	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Ethyl acetate	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Ethylene oxide (gas)	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Hexane	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Hydrogen chloride (gas)	< 0.40	< 0.20	< 0.20	< 0.20	< 1.00
Methanol	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Methyl chloride (gas)	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Nitrobenzene	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Sodium hydroxide, 50% w/w	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Sulfuric acid, 96.1% w/w	< 0.33	< 0.20	< 0.20	< 0.20	< 0.93
Tetrachloroethylene	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Tetrahydrofuran	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Toulene	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Chemical Warfare Agents					
Blister Agent Requirements	≤ 1.33	≤ 1.33	≤ 1.33	≤ 1.33	≤ 4.0
Distilled Mustard	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Nerve Agent Requirements	≤ 0.40	≤ 0.40	≤ 0.40	≤ 0.40	≤ 1.25
Soman	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
Optional Liquefied Gases*	≤ 6.0				
Ammonia (liquefied)	-				
Chlorine (liquefied)	-				
Ethylene oxide (liquefied)	-				

*Liquefied chemical gases are only evaluated over a 15-minute exposure period.

ONESUIT® Pro 2 – Garment Seam

Test Period Interval	Cumulative Permeation ($\mu\text{g}/\text{cm}^2$) over Test Period Interval				
	0-15 min	15-30 min	30-45 min	45-60 min	1-hour total
Chemical/ Requirement	≤ 2.0	≤ 2.0	≤ 2.0	≤ 2.0	≤ 6.0
Acetone	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acetonitrile	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Acrolein	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Acrylonitrile	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Anhydrous ammonia (gas)	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
1,3-Butadiene (gas)	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Carbon disulfide	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Chlorine (gas)	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Dichloromethane	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17
Diethyl amine	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Dimethyl formamide	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
Dimethyl sulfate	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13
Ethyl acetate	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Ethylene oxide (gas)	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexane	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Hydrogen chloride (gas)	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Methanol	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
Methyl chloride (gas)	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Nitrobenzene	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07
Sodium hydroxide, 50% w/w	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Sulfuric acid, 96.1% w/w	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Tetrachloroethylene	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
Tetrahydrofuran	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
Toluene	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
Chemical Warfare Agents					
Blister Agent Requirements	≤ 1.33	≤ 1.33	≤ 1.33	≤ 1.33	≤ 4.0
Distilled Mustard	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Nerve Agent Requirements	≤ 0.40	≤ 0.40	≤ 0.40	≤ 0.40	≤ 1.25
Soman	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Optional Liquefied Gases*	≤ 6.0				
Ammonia [liquefied]	-				
Chlorine [liquefied]	-				
Ethylene oxide [liquefied]	-				

*Liquefied chemical gases are only evaluated over a 15-minute exposure period.

ONESUIT® Pro 2 – Visor Seam

Test Period Interval	Cumulative Permeation ($\mu\text{g}/\text{cm}^2$) over Test Period Interval				
	0-15 min	15-30 min	30-45 min	45-60 min	1-hour total
Chemical/ Requirement	≤ 2.0	≤ 2.0	≤ 2.0	≤ 2.0	≤ 6.0
Acetone	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acetonitrile	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Acrolein	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Acrylonitrile	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Anhydrous ammonia (gas)	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
1,3-Butadiene (gas)	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Carbon disulfide	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Chlorine (gas)	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Dichloromethane	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17
Diethyl amine	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Dimethyl formamide	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
Dimethyl sulfate	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13
Ethyl acetate	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Ethylene oxide (gas)	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexane	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Hydrogen chloride (gas)	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Methanol	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
Methyl chloride (gas)	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Nitrobenzene	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07
Sodium hydroxide, 50% w/w	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Sulfuric acid, 96.1% w/w	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Tetrachloroethylene	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
Tetrahydrofuran	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
Toluene	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
Chemical Warfare Agents					
Blister Agent Requirements	≤ 1.33	≤ 1.33	≤ 1.33	≤ 1.33	≤ 4.0
Distilled Mustard	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Nerve Agent Requirements	≤ 0.40	≤ 0.40	≤ 0.40	≤ 0.40	≤ 1.25
Soman	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Optional Liquefied Gases*	≤ 6.0				
Ammonia (liquefied)	-				
Chlorine (liquefied)	-				
Ethylene oxide (liquefied)	-				

*Liquefied chemical gases are only evaluated over a 15-minute exposure period.

*Note: The closure has not been tested for permeation resistance.

PHYSICAL/THERMAL/ OPERATIONAL DATA

ONESUIT® Pro 2	Performance Requirement	Test Method	Requirement	RESULT
Base Requirements				
Ensemble	Liquidtight integrity	ASTM F1359 (Section 8.3)	- No liquid penetration - No liquid accumulation in outer gloves - No liquid accumulation in outer boots	Pass
Note: MSA Firehawk M7 and Scott AirPak SCBA Systems were used during certification testing	Overall ensemble function and integrity	ASTM F1154 ASTM F1052 (Section 8.4)	- Ending suit pressure ≥ 80 mm water gauge - Test subject completes task - Test subject has visual acuity of 20/35 or better through face piece lens and visor - Time to remove and reinsert hands in gloves 5 times ≤ 2 minutes	Pass
	Air flow capacity	Section 8.5	- Internal suit pressure ≤ 150 mm water gauge - Ending suit pressure ≥ 80 mm water gauge	Pass
	Overall inward leakage	Section 8.8	- PPDF _{sys} ≥ 488 - PPDFI (local) ≥ 1071	1254 4152
Exhaust valve	Exhaust valve mounting strength	Section 8.9	- Strength > 135 N	471
	Exhaust valve inward leakage	Section 8.24	- Leakage rate ≤ 30 ml/ min	0.0
Scott Pass-thru	External fitting installation effect on integrity	ASTM F1052 (Section 8.2)	- Ending suit pressure ≥ 80 mm water gauge	Pass
	External fitting pull-out strength	Section 8.13	- Strength > 1000 N	3035
MSA Quick-Fill Pass-thru	External fitting installation effect on integrity	ASTM F1052 (Section 8.2)	- Ending suit pressure ≥ 80 mm water gauge	Pass
	External fitting pull-out strength	Section 8.13	- Strength > 1000 N	1826
MSA Dual Purpose Pass-thru	External fitting installation effect on integrity	ASTM F1052 (Section 8.2)	- Ending suit pressure ≥ 80 mm water gauge	Pass
	External fitting pull-out strength	Section 8.13	- Strength > 1000 N	2740
Survivair (Sperian) Pass-thru	External fitting installation effect on integrity	ASTM F1052 (Section 8.2)	- Ending suit pressure ≥ 80 mm water gauge	Pass
	External fitting pull-out strength	Section 8.13	- Strength > 1000 N	2441
Ventilation Pass-thru	External fitting installation effect on integrity	ASTM F1052 (Section 8.2)	- Ending suit pressure ≥ 80 mm water gauge	Pass
	External fitting pull-out strength	Section 8.13	- Strength > 1000 N	2368

PHYSICAL/THERMAL/ OPERATIONAL DATA (Cont.)

ONESUIT® Pro 2	Performance Requirement	Test Method	Requirement	RESULT
Base Requirements				
Suit Material	Flame resistance	ASTM F1358 (Section 8.7)	- Afterflame time ≤ 2 seconds - No melting and dripping	0.0 No melt or drip
	Burst Strength	ASTM D751 (Section 8.10)	- Strength > 200 N	1140
	Puncture propagation tear resistance	ASTM D2582 (Section 8.11)	- Tear resistance ≥ 49 N	182.4 – (MD) 203.9 – (XMD)
	Cold temperature performance	ASTM D747 (Section 8.12)	- Bend moment ≤ 0.057 Nm	0.056-(MD) 0.029-(XMD)
Suit seam	Breaking strength	ASTM D751 (Section 8.22)	- Strength > 67 N/25 mm	379.9
Suit closure	Chemical penetration resistance	ASTM F903 (Section 8.23)	- No penetration of 15 liquid chemicals	Pass
	Breaking strength	ASTM D751 (Section 8.22)	- Strength > 67 N/25 mm	164.0
Visor material	Flame resistance	ASTM F1358 (Section 8.7)	- Afterflame time ≤ 2 seconds - No melting and dripping	0.0 No melt or drip
	Visor high-mass impact resistance	Section 8.29	- No full-thickness cracks, holes, or fractures	Pass
Visor seam	Breaking strength	ASTM D751 (Section 8.22)	- Strength > 67 N/25 mm	361.8

DESCRIPTION OF MATERIALS

ONESUIT® Pro 2 uses only materials that have passed the most rigorous testing.

- **Garment material:** The garment material is CORETECH® Uniguard 4300 which utilizes Saint-Gobain's proprietary fluoropolymer films and unique manufacturing processes.
- **Visor material:** The visor material is CORETECH® Clearguard 4700 which utilizes Saint-Gobain's proprietary fluoropolymer films and unique manufacturing processes. The visor material is designed with permanently applied anti-fogging resistance on the inside surface.
- **Gloves**
 - ONESUIT® Pro 2 comes standard with Saint-Gobain's ONESUIT® Hazglove-91.
 - The gloves are permanently joined in a single piece construction featuring a CORETECH® Uniguard 2700 internal barrier liner and an Aramid blend outer glove.
 - The gloves are attached to the suit utilizing a ring and clamp system.
 - Gloves are available in sizes: Small thru 2X-Large.
- **Footwear**
 - ONESUIT® Pro 2 shall be worn with either ONGUARD Hazmax (p/n 87012, 87015, sizes 6-15) or TINGLEY HazProof (p/n 82330, 82331, sizes 7-13) protective boots.
 - The boots are worn over integral booties that are made of garment material and connected directly to the suit.
- **Closure system**
 - The closure system consists of a rear entry 48" vapor-tight zipper covered by flaps constructed out of garment material that are sealed utilizing hook and loop fastener strips.
 - The zipper is made out of the following materials
 - Tape: PU coated Polyester
 - Slider: Polyamide
 - Chain: Polyamide
- **Seams**
 - All garment seams are stitchless. They are produced by heat welding, and are covered on the outside of the suit with CORETECH® Uniguard seam tape.
 - The zipper and visor are sewn into the garment with the seams covered by CORETECH® Uniguard seam tape on both the inside and outside of the suit.
- **Exhaust Valves**
 - The suit is equipped with two flapper style exhaust valves that are mechanically attached to the suit and covered by flaps constructed out of garment material.
 - The valve body is made from impact-resistant plastic, and the diaphragm is made from silicon rubber.
- **Protective helmet:** The suit is designed to be worn with an ANSI style hard hat.
- **Pass-thru:** ONESUIT® Pro 2 is available with the following optional pass-thru assemblies:
 - Scott
 - MSA Dual Purpose
 - MSA Quick Fill
 - Survivair (Sperian)
 - Ventilation

SHELF LIFE

ONESUIT® Pro 2 is expected to last at least 10 years from the date of manufacture when following the specified storage, maintenance, and inspection practices. The shelf life for ONESUIT® Pro 2 is based on the following product attributes:

1. The use of inherently stable materials (Fluoropolymers, Polyamides, Polyesters, etc.)
2. Elimination of adhesive systems that degrade over time; and
3. Proprietary fabrication/ welding techniques that minimizes the propensity to degrade/weaken with use.

NOTE: While the stated shelf life for ONESUIT® Pro 2 is at least 10 years from the date of manufacture, Saint-Gobain maintains that there is no need to dispose of the product based strictly on time.

RECOMMENDED STORAGE PRACTICES

ONESUIT® Pro 2 should be stored in a safe and dry location away from direct sunlight, with temperatures maintained between 25-110°F (-4 – 43°C). When not in use, the suit should be stored in the supplied storage bag with the zipper in the fully closed position.

Note: Use caution when folding and handling the suit to avoid creasing the visor, as this could impair visibility and/or compromise the performance of the suit.

SAFETY CONSIDERATIONS

All protective equipment needs to be well maintained in order to function properly; ONESUIT® Pro 2 is no different. The suit must be inspected and pressure tested prior to use, and removed from service if it fails either the inspection or pressure test. Users must read this guide thoroughly and should take the following precautions into consideration:

1. Avoid direct flame contact. The suit is not intended for use in/or near an open flame for extended periods of time.
2. Avoid continuous exposure to any known hazardous substances. Do not purposely expose the suit to a constant liquid/vapor hazard.
3. If the following symptoms are experienced, the user **MUST** leave the "hot zone" immediately: fever, nausea, dizziness, eye irritation, breathing difficulty, excessive fatigue, or any unusual odor or taste.

LIMITATIONS OF USE

This product is recommended for use as described in the standard to which it is certified. If it is suspected that this product has come into contact with an unknown hazardous substance, dispose of it using appropriate departmental procedures.

INSPECTION GUIDELINES

A visual inspection and pressure test of ONESUIT® Pro 2 must be performed and passed upon receipt, prior to each use, and at least once per year if the suit has not been in use.

- Inspect all areas of the suit for cuts, punctures, or damage; including seams, entire garment and visor.
- Ensure the gloves are securely attached to the suit and refer to the ONESUIT® Hazglove-91 user guide for the inspection guidelines of the gloves.
- Inspect the zipper for proper function. If it requires more pull force than usual, apply lubricant as per the maintenance section of this user guide.
- Verify the exhaust valves are in place, properly seated, and hand tightened.

CARE AND MAINTENANCE

At a minimum, ONESUIT® Pro 2 should be inspected and pressure tested once a year. Please refer to the "Inspection Guidelines" and "Pressure Testing" sections of this user guide for complete instruction. In addition to the annual inspection and pressure test, it is recommended to periodically lubricate the zipper using Dow Molykote 33 grease. Apply a small amount of lubricant to the Top-Seal of the zipper. Do not lubricate the zipper teeth, as the operation of the zipper (open and close) a few times will adequately distribute the lubricant. Due to the nature of the product, it is not recommended to repair ONESUIT® Pro 2 if it is found to be compromised. If there is any question about the condition of the suit, discontinue use immediately and remove from service.

CLEANING

ONESUIT® Pro 2 should be cleaned after each use if it has been worn for routine operations, but not exposed to any chemical or biological contamination. For cleaning the suit, liquid dish washing detergent may be used along with a disinfectant at the ratio of 1 oz. each per gallon of warm water. Using a soft, clean rag, gently rub the cleaning solution over the entire inside and outside surfaces of the suit. Then, using a new soft, clean rag and warm water, gently rinse the entire suit inside and out. To dry the suit, simply lay it out so that the inside and outside receives adequate ventilation for drying until the suit is thoroughly dried.

WARNING: Do not use bleach as a cleaning agent, and do not use the suit if not thoroughly cleaned and dried.

DECONTAMINATION / DISPOSAL

Refer to departmental procedures for the appropriate decontamination and disposal procedures of this product. While it is not recommended to re-use ONESUIT® Pro 2 if it has been exposed to biological or chemical agents, it will withstand exposure to some agents without degradation, but following decontamination, perform a full inspection and pressure test to determine if is suitable for continued use.

PRESSURE TESTING

Use the following steps to pressure test the suit:

1. Open the suit and remove the exhaust valves (qty 2).
2. Install either the compatible pressure test adapters (sold separately in the "Pressure Test Adapter Kit"; p/n 22596M) or the fittings of the "Pressure Test Kit" (p/n 25171M) in the valve holes, with the hose connections facing outside of the suit. If using the adapters, one adapter should have a large diameter hose and fitting, and the other a small diameter hose and fitting.
3. After installing the adapters or fittings into the suit, close the zipper completely.

COMMERCIALY AVAILABLE PRESSURE TEST KITS CAPABLE OF TESTING TO ASTM F1052 MAY BE USED TO TEST ONESUIT PRO 2. REFER TO THE APPLICABLE PRESSURE TEST KIT OPERATING INSTRUCTIONS BEFORE PROCEEDING

4. Inflate suit to a gauge pressure of 5" H₂O and hold for 1 minute. This will pre-expand the volume inside the suit. DO NOT OVER-INFLATE as that could potentially damage the suit.
5. After 1 minute, reduce the gauge pressure to 4" H₂O and hold for 4 minutes. Be careful not to touch or disturb the suit during the test period as this could create false test results.
6. The suit passes the pressure testing requirements if the ending pressure is greater than 3.2" H₂O.
7. Record the test results in the inspection log found at the end of this user guide.

DONNING AND DOFFING INFORMATION

ONESUIT® Pro 2 is designed to be donned and doffed with great ease.

- Refer to the sizing section to determine the most appropriate size suit.
- Be sure the selected suit has passed inspection and pressure testing as required.
- The assistance of an additional person will be required for the donning and doffing process.
- Be sure there are no items on the body or clothing that could cause damage to the inside of the suit, such as rings, watches, badges, belts, etc.

Note: While the most appropriate undergarments will depend on temperature/environmental conditions you are in and the mobility demands of the mission. Certain synthetic and/or natural fabrics against the skin will aid in comfort by moving moisture away from the body.

To don the suit:

1. Choose a location that offers a clean place to stand and has either a bench or chair.
2. While seated, place both legs into the suit with only socks over the feet.
3. Pull the boot flap up over the shin, and insert booties into outer boot; lace up outer boot (if needed). Pull boot flap back down covering outer boots.
4. Stand up and put on SCBA pack while suit is at waist level. Adjust SCBA pack as needed until comfortable.
5. Put on facemask and adjust until tightly fit around the face and comfortable. Put on safety helmet.

Note: Pause at this point if entry is not imminent and wait seated in this position.

6. When ready to complete donning and proceed with the mission, turn on air supply and connect SCBA to facemask.
7. While standing, insert both arms into sleeves of suit simultaneously and pull suit over the head.
8. Insert hands into gloves, ensuring each digit is properly seeded.
9. With the help of an assistant, zip suit completely closed and close flap over zipper.

To doff the suit:

1. Follow the reverse order followed when donning the suit.

NOTE: When donning and doffing, do not stand directly on the ground unless wearing the outer boots. Using a mat or protective covering to stand on will aid in minimizing the possibility of damaging the suit.

GLOVE REPLACEMENT PROCEDURE

If the gloves have been visibly damaged, show signs of wear and tear, or cause the suit to fail the pressure test, then a replacement pair should be installed to keep the suit in operation.

Use the following steps to remove and reinstall the gloves onto the suit:

1. Flip the elastic portion of the outer glove gauntlet over the glove ring.
2. Turn the sleeve of the suit inside out, and then remove the tape and rubber bands from over the clamp.
3. Remove the glove clamp by loosening the hex bolt; use only a socket connection, as other tools could accidentally damage the suit.
4. Gently pull the entire glove out of the sleeve, then remove the glove ring.

Note: Do not try to remove the inner liner from the outer glove as these are designed to be permanently attached.

Be sure to retain the rubber band, glove clamp, and glove ring if they are free of damage. Replacement parts are available if needed.

5. Fold the elastic portion of the glove toward the fingers so that the gauntlet of the inner liner is fully exposed and accessible
6. Insert the glove ring into the replacement glove about 1.5 inches above the bottom of the glove liner until it's tightly inserted. The alignment line on the glove ring should be in the middle of the palm side of the inner liner. Secure with a wrap of standard white electrical tape over the liner at the location of the glove ring.
7. Push the ring side of the glove assembly into the inside-out sleeve from the shoulder until the edge of the glove ring is even with the end of the sleeve. Make sure the alignment line on the glove ring lines up with the seam on the sleeve. This ensures the glove is oriented properly on the suit.
8. Wrap electrical tape around the end of the suit sleeve centered on the glove ring.
9. Flip the 1.5 extra glove liner over the suit sleeve and secure with electrical tape
10. Position the clamp centered over the electrical tape so that the hex bolt is 180 opposite the suit sleeve seam.
11. Cover clamp with the rubber band, then wrap the rubber band with electrical tape until it's completely covered (3-4 wraps).
12. Invert sleeve to turn right side out by gently push and the glove ring towards the end of the suit sleeve from inside the suit. **DO NOT PULL ON THE GLOVE TO FORCE THE GLOVE RING INTO POSITION, AS THIS COULD DAMAGE THE GLOVE.**

COMPLIANCE STATEMENTS

ONESUIT® Pro 2 is certified by Underwriters Laboratories (UL) to the following NFPA standards:

- NFPA 1991 – Standard on Vapor – Protective Ensembles for Hazardous Materials Emergencies and CBRN Terrorism Incidents (2016 Edition)

NOTE: Proper use shall be in accordance with NFPA 1500 – Standard on Fire Department Occupational Safety and Health Program

- For users in the United States, 29 CFR 1910.132, "Personal Protective Equipment"
- For users in other countries, consult national or other applicable personal protective equipment regulations

DISCLAIMERS AND WARNINGS / WARRANTY / LIMITATION OF LIABILITY

Disclaimers and Warning:

Information contained in this User Manual and Technical Guide (the "Technical Manual") is based on technical data and other information that Saint-Gobain Performance Plastics (SGPPL) believes to be reliable. Such information may be revised, amended or supplemented as additional data and/or information becomes available to SGPPL.

Information contained in this Technical Manual is based on certain tests conducted on the fabric comprising the ONESUIT® Pro (the Suit) and on the finished ensemble.

Information contained in this Technical Manual is intended to be used by the purchaser of the Suit to determine if the Suit is suitable for such purchaser's specific user or application. Any such determination is made at the purchaser's sole risk and SGPPL assumes no liability in connection with the use of such information by any such purchaser.

NO SUIT CAN PROVIDE COMPLETE PROTECTION UNDER ALL CONDITIONS AND FOR ALL USES AND APPLICATIONS. IT IS SOLE RESPONSIBILITY OF THE PURCHASER TO DETERMINE THAT THE SUIT IS APPROPRIATE AND SUITABLE FOR THE PURCHASER'S SPECIFIC USE OR APPLICATION.

It is the responsibility of the purchaser and/or the end user of the Suit to, among other things:

1. Determine that the Suit is suitable for such purchaser or end user's specific use or application;
2. Understand the information contained in this Technical Manual relating to the proper use, handling, maintenance, storage and disposal of the Suit;
3. Read, review and understand the information contained in this Technical Manual and any other information supplied to the purchaser with respect of the Suit;
4. Confirm that the Suit is appropriate for the purchaser and/or end user's specific use or application and complies with all government and industry standards and requirements applicable to the purchaser's use or application; and
5. Diligently inspect the Suit before and after each use for wear and damage. See additional information relating to inspection of the Suit for wear and damage contained elsewhere in this Technical Manual.

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Warning:

If the Suit becomes torn or frayed, is abraded, ripped or punctured, or the integrity of the Suit is otherwise compromised in any way (collectively "Damaged"), the purchaser and/or end user should immediately discontinue use of the Suit. Failure to discontinue use may result in injury or exposure to potentially harmful chemicals.

Warranty:

SGPPL warrants to the purchaser and/or end user of the Suit that the Suit will be free from defects in materials and workmanship for a period of ninety (90) days from the date of purchase (the "Product Warranty") provided that the Suit has (i) been stored, used and maintained properly in accordance with all written instructions and recommendations contained in this Technical Manual provided by SGPPL with the Suit and (ii) not been Damaged, altered, modified or repaired.

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In the event that the purchaser and/or end user believes that the Suit breaches the Product Warranty, the purchaser and/or end user must provide SGPPL with such Suit and a detailed statement of the non-conformance or defect. SGPPL will advise the purchaser as soon after its investigation as possible, whether or not SGPPL concurs that the Suit breaches the Product Warranty. If SGPPL, in its sole discretion, concurs that the Suit breaches the Product Warranty, SGPPL will, as purchaser's sole and exclusive remedy, effect a replacement or refund with respect to such Suit.

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Saint-Gobain is one of the top 100 industrial corporations, with a tradition of excellence dating back more than 350 years.

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Saint-Gobain Performance Plastics
701 Daniel Webster Highway
Merrimack, NH 03054
Tel: 603.424.9000
Technical and Customer Service
800.451.6101
www.onesuitprotection.com

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