



Gas Extraction Suit Training Manual





Introduction

Important Warning

Oberon Gas Extraction Suits, Balaclavas, and Gloves when properly selected and worn, are designed to provide protection from burn injuries resulting from severe or prolonged fire hazards. General suit specifications are listed below.

Prohibited Clothing

Clothing and other apparel made from flammable synthetic materials that melt shall not be worn under the Gas Extraction Suit. Garments made with acetate, acrylic, nylon, polyester, polyethylene and spandex, either alone or in blends, shall not be used.

Acceptable Clothing

Clothing made with natural fiber such as cotton or wool are acceptable. Such clothing is flammable, but will not melt or drip, and therefore will not further deepen skin burn injuries.

Any clothing made with Flame Resistant (FR) fabrics are acceptable. Wearing additional FR clothing under a Gas Extraction Suit will enhance the protection and further decrease predicted skin burn injuries.

Disposal

These garments are not hazardous waste and therefore may be disposed as regular garbage. Contaminated clothing, however, may be hazardous waste depending on the type of contamination. When properly cleaned, PPE may be recycled.

Support

If there are any further questions regarding use or maintenance of our PPE, please do not hesitate to contact us. If there are any questions regarding any of this information, please contact your supervisor, safety personnel or contact Oberon Technical Support.

Suit Features

Gas Extraction Suits are engineered to protect workers from thermal exposures and prevent skin burn injuries. An Oberon GES8+ Suit is designed to protect workers from an 8-second thermal exposure. Suits are designed to optimize protection, fit, and function.

Suit features include:

- Lightweight fabric system.
- High visibility reflective trim.
- Kevlar® wristlets.
- Dual stage front closure – brass zipper and hook & loop closure flap.
- Filament rayon inner fabric to absorb moisture and prevent static.
- Large 26” brass leg zippers for extra wide opening.



Escape Strap

Gas Extraction Suits can be equipped with an Escape Strap. This system provides an alternative to wearing a full body harness on the inside of the suit. The Escape Strap is designed like a firefighter drag rescue device (DRD) when used for emergency response to help rescue a worker.

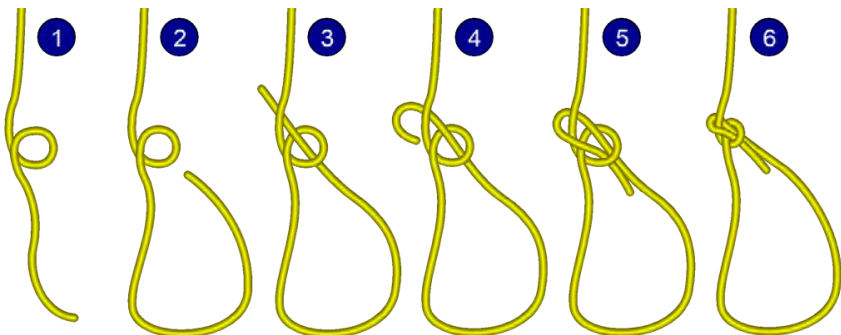
The Escape Strap functions could include:

- Communication.
- Provide Emergency Direction.
- Drag Rescue Device.

The Escape Strap consists of a Kevlar® cord that extends 10' from the back of the suit, that can be wrapped and stowed away in a small pocket at the back of the suit.



The Escape Strap can be extended to any length necessary by tying a bowline knot on the end.



Suit Sizing

Gas Extraction Suits are designed as coveralls (one-piece garment) to prevent blowing gas from entering inside the suit and compromising worker safety.

Size selection is important to ensure proper fitting garments based on a worker’s body dimensions including their chest, waist and vertical height.

Suits shall be loose fitting, but not 3X larger than a worker’s body. Workers must be able to properly function while wearing their suit and perform work tasks safely, and run or climb to escape harm’s way if necessary.

Body Dimensions – Size Selection

1. Use a Fabric Measuring Tape to measure the actual chest and waist dimensions.
2. Select the best size based on the larger of the two dimensions.
3. If in doubt, always round up (sizes go up to 8XL).

Worker Body Size	S	M	L	XL	2XL	3XL	4XL	5XL	6XL
CHEST	36	39	42	46	50	54	58	62	66
WAIST	30	33	36	40	44	48	52	56	60

Vertical Height – Size Selection

1. Stand against a wall and measure.
2. Suits must provide full coverage.
3. Oberon can manufacture coveralls in additional custom sizes.
4. If in doubt, always round up (sizes go up to Extra Tall).

Vertical Height	Worker Stands		
X-SHORT	5'2"	to	5'3"
SHORT	5'4"	to	5'5"
REGULAR	5'6"	to	6'0"
TALL	6'1"	to	6'3"
X-TALL	6'4"	to	6'7"

Using The Gas Extraction Suit

Inspection

All personal protective equipment (PPE) must be inspected before each use. Follow these three steps to inspect the Gas Extraction Suit, Balaclava, and Gloves.

1. Open all suit zippers while getting the suit ready to wear.
2. Inspect for any damage to the fabric, zippers or components.
3. Inspect for any contamination that could reduce your protection, e.g., flammable substances including fuel, oil or grease, and ensure suit is dry and not wet.

Immediately remove any damaged or contaminated suit from service and do not use until properly cleaned and/or repaired.

Wearing The Balaclava

The Gas Extraction Suit must be worn with an equally protective Balaclava - a head protective fabric that protects the neck and head except for a small portion of the facial area.

The opening of the Balaclava is designed to work with a full-face respirator mask and must fit correctly to prevent any thermal energy from bypassing the Balaclava and burning your face or head.

When putting on a Gas Extraction Suit, put on the Balaclava first. This allows you to pull the suit coverall over top of the Balaclava, laying the fabric flat and tucked in and under the suit material. This interface is important for suit performance to prevent burn injuries.

While putting on a respirator mask, the Balaclava can be pulled down around your neck, then you can pull the Balaclava up and over the respirator mask to complete the protective system.

Note: The respirator mask and material are not as protective as a Gas Extraction Suit or equivalent Balaclava, so ensure the mask components and materials are covered by the Balaclava as best as possible.

How To Properly Put On

1. Start with all suit zippers open.
2. Complete pre-use **INSPECTION**.
3. Put on the Balaclava first, before the suit.
4. Prepare to put the suit on by finding a safe location to balance and take the weight off your legs, by sitting down or leaning back against a secure object.
5. With or without boots on, push one leg in at a time, pointing your toes away from your body.
6. Pull the coverall up, put arms in one at a time, then continue to pull the coverall over your shoulders. Push your hands into the Kevlar® wristlets with your thumb through the small hole and fingers out the end.
7. Adjust the Balaclava to lay flat under the suit neck and shoulders before using any zippers.
8. Carefully close both leg zippers by using your finger to help keep the fabric backing from catching in the zipper. If fabric catches, reverse to free the material before trying again.
9. Fully close front two-stage closure using the body zipper and protective hook & loop closure flap.
10. Ensure all zippers are closed at the ankles and neck, with no gaps or visible clothing from under the suit. All underlayer clothing must be completely covered.

Final Check – Buddy System

After putting on your suit, and before proceeding to complete a work task, complete a final check. Ask a co-worker using a “buddy system” to help inspect your suit to ensure everything is worn correctly, make sure the Balaclava is tucked and fits properly, and no flammable garments are exposed.

If working alone, use a sideview mirror on a work vehicle to help check your suit to complete a final check.

How To Properly Take Off

1. Open the front protective flap by pulling the hook & loop closure open, and open the body zipper.
2. Remove the Balaclava.
3. Pull the suit coverall off each shoulder, one at a time.
4. Pull your arms out from the suit by holding the Kevlar® wristlet with one hand and pulling your arm out in the opposite direction; repeat for the other arm.
5. Using a safe and secure location, take your weight off your legs before pulling your boots out of each leg.
6. Once the suit is off, shake or brush off any loose dirt from the inside and outside of the suit.
7. Close all zippers and hook & loop closure flap.
8. Fold suit and return it to the proper **STORAGE** location or bag.

Storage

Use an Oberon Storage Bag to properly store Gas Extraction Suit Coveralls, Balaclava, and Gloves. PPE shall be stored in dry and dust-free conditions, not in direct sunlight or other Ultraviolet (UV) light sources. Pre-use **INSPECTION** is required before each use.

Repairs And Maintenance

All repairs shall be performed by Oberon. It is important that damaged fabric be repaired or replaced with the same fabric and that all stitching be done with FR threads. Repairs done with other fabrics or flammable fabrics would likely negatively impact the protection offered by the garments.

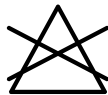


Laundering Instructions

Care



Normal cycle, warm wash
up to 40°C (104°F)



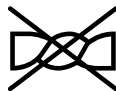
Do not bleach



Tumble dry, low heat



Dry in the shade out of
direct sunlight



Do not wring



Do not iron

Garments/Fabric

Flammable contaminants will reduce the thermal performance of any flame-resistant garment. Wash garments to ensure that no greases, oily soils or other flammable contaminants are present when garment is worn.

No Bleach

Washing any flame-resistant fabric with bleach can negatively impact performance. Bleach, whether chlorine or oxygen (hydrogen peroxide), can impact the strength of Aramid fibers after garments are washed 50 or more times. To avoid these problems Oberon recommends the use of a mild but effective detergent that does not contain any chlorine or oxygen bleach.

Detergents

Use baby detergents that clearly advertise 0% chlorine bleach, oxygen bleach, or fabric softeners. FR garments should not be washed with fabric softeners because they can leave a flammable film on the fabric. While there are other detergents without bleach or fabric softeners, baby detergents are formulated to be mild and effective without all the additives.

To ensure optimal performance, the following is recommended:

- Liquid detergent is best for removing oil and grease.
- Powder detergent is best for removing mud and clay.

Washing Procedures

Gas Extraction Suits may either be washed or dry cleaned. Garments shall be washed or cleaned separately from any other clothing to avoid contaminants of unknown fibers.

Note: The hook part of the hook & loop closure fasteners may negatively affect the surface of clothing during washing procedures by causing unwanted pilling. It is recommended to close all hook & loop closure fasteners before washing by covering the fasteners with their corresponding counterparts.

Washing Sequence

1. Add water into washer.
2. Add baby detergent.
3. Then add garments.

Washing Temperature

Main washing at temperatures up to 40°C (104°F) with a washing bath relation of 1:10.

Rinsing

After washing, PPE shall be rinsed carefully to remove all remnants of alkaline and/or possibly flammable residues of the detergent. It may take 2 - 3 rinsing cycles.

Drying

Tumble dry low heat and remove immediately. Garments may be spun dry and dried in a cylinder drying machine with low or normal temperature until remaining humidity level of 10% - 20% is achieved.

Note: Do NOT wring dry.

Ironing

Do not iron Gas Extraction Suits, Balaclavas, or Gloves.

Dry (Chemical) Cleaning

Dry Cleaning is recommended when clothing becomes very dirty by oil or grease, for example. Dry cleaning shall be done according to the care labeling by the usual 2-bath procedure.

Boosters should only be used in extreme situations and only with reduced mechanism. Dry cleaning shall only be executed by experts. Before PPE is reused it shall be completely free of solvents. Therefore, the clothing should ventilate for at least one day after being cleaned.

Washing Frequently Asked Questions

- Amount of Detergent: See label on bottle or box for recommendation.
- Washing Machine: Top or front loading (front loading is preferred).
- Water Temperature: 40°C (104°F) - COLD or WARM cycle, NOT HOT.
- pH: Controlled at the correct level by the detergent.
- Do NOT use prewash agents, or use fabric softeners or extra cleaning agents such as Oxy-Clean, 30 Mule, Team, or Borax, etc.

Sample Garment Labels

GES8™ Gas Extraction
Coverall

Use this **Coverall** with suitable
Balaclava Hood, Gloves and SCBA

Tested according to the ASTM F1930 Flash Fire instrumented mannequin standard test method

67% Aramid, 32% FR Rayon, 1% Anti-static

Caution
Flammable contaminants will reduce the thermal performance of any flame resistant garment. Wash garment to ensure that no greases, oily soils or other flammable contaminants are present when garment is worn. Repairs to the garment must be made with the same thread and fabric.

Do not reuse this product after a flash fire exposure

Washing Instructions



Fabric: WASH – Wash this garment separately from other types of garments or fabrics. Use warm water & mild detergent. DO not use detergents or additives containing (or creating) chlorine bleach or oxygen bleach (example: Hydrogen Peroxide) or enzymes. Do not use soap or fabric softeners. Do not wring dry.

DRY – Tumble dry low heat and remove immediately. Do not iron. Garment can be dry cleaned. Do not use disinfectants

Important Warning
For Flash Fire Applications, this coverall does not provide a barrier from gases. Not for Electric Arc Flash applications.
This garment is designed to reduce burn injury in the event of a Flash Fire. Testing, conducted according to ASTM F1930, indicates up to 8 seconds for the individual wearing this coverall to escape or be pulled out of fire exposure. User must wear/use a harness, retrieval line, balaclava hood, SCBA, gloves and heavy duty leather boots. Real accident conditions will vary from laboratory testing. User should do a hazardous assessment before using this or any safety equipment.
Coverall that are equipped with a harness port should be used with the harness under the coverall. Connect retrieval line through port in back of coverall. Use SCBA. Use Oberon balaclava hood.

Remember
Always perform a hazardous assessment to determine the potential hazard and the suitable safety equipment for the task or application.



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GES8-CVL-2XL-ES



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R-23-25

GES FR Sock Hood
1034 56% OPAN
28% MODACRYLIC
15% PARA ARAMID
1% ANTI STAT

Machine Wash Warm
No Bleach
Tumble Dry Medium
Only body areas covered
by this garment are
protected from heat exposure
Made in USA
www.oberoncompany.com
Part #GES-BH-2

Sample Balaclava Label

Sample Gas Extraction Suit
with Escape Strap Label



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