

**FLAME** **PRO**

## Introduction to FlamePro Valiant Structural Suit

### Changing the game for firefighting garments

We understand what it means to be responsible for your firefighters' lives and the people they protect. Our brand is 100% committed to spearheading new garment technologies that contribute to firefighter safety.

We are a British company based near to Hull. Our European manufacturing and supply chain mean we supply globally to brigades, governments and private firms.

Major Brigades and national brands trust us to keep their teams safe. We don't manufacture for anyone else – nothing performs like FlamePro .

### Our Belief

Our mantra is that firefighters are heroes, not superheroes! They must have garments that protect.

Our mission is to make firefighters' work safer and more manageable, the world over.

We know there is more to a suit than how much it can protect from heat. It needs to be light, and it needs to be fit well, it requires intelligent ergonomic design.

This passion has driven us to develop the most advanced structural suit on the market today. We believe that once you have tried it, you'll agree.

### Experts build your firefighting garments

CONTINUOUS PRODUCT DEVELOPMENT BY EXPERTS

# Introduction to Valiant Structural Suit

## FLAME PRO

We set out to bring about innovation through fabric and design technology focused on what our customers' need.

To be safer and comfier for longer.

It's about function and fit - making something that works better and fits better. We know if we do our job well, your team can do theirs.

### **Our mission is to make firefighters' jobs safer and more comfortable.**

That's why we work closely with every customer to make sure they're getting the best option for every situation. Every firefighter is essential, every firefighter is different, and to us, it's firefighters that matter most. We know there is more to a suit than how much it can protect from heat. It needs to be light; it needs to be well-fitting; it requires intelligent pocket placement and quick-escape options.

### **Full-Service firefighting range**

We offer head to toe solutions for firefighters on the job and in the station.

### **Reputation for quality**

We're certified to ISO 9001:2008 and produce quality garments crafted to high standards with superior materials.

### **6-8 week lead time**

We also have an industry-leading lead time of between 6-8 weeks on structural suit orders. We can measure your team virtually or in-person\* covid restriction permitting.

### **Available worldwide**

Based in the UK, we provide firefighting clothing and accessories to firefighters across the globe to leading Brigades, national institutes, private firefighting teams

### **Please speak with us now**

Call or email today, and we can arrange a meeting to discuss your team's requirements.



# The Valiant Structural Fire Suit

FLAME **PRO**

**New technologies.  
New designs.  
New benchmark.**

## Valiant Structural Suit

The new VALIANT structural fire suit represents a significant step forward in firefighter protection. Protect the whole team with a full range of male and female specific sizes.

The VALIANT isn't just the latest version of an existing product, it's a whole new suit. Using all-new designs from our in-house specialist team and the latest in fabrics, membranes and components (including some specifically designed for these garments), make sure your team benefit from the best solutions on the market.

### Technical fabric innovation

Created by our team of experts by combining new fabric and membrane technologies with existing high performance layers

### Great to wear

Advanced ergonomics and fabrics create a garment that's easier to work in and more comfortable to wear

### So much choice

Male and female designs. 5 fabric systems. 96 size options. The ability to adjust garment features for your team

### Faster delivery

Equip your team in no time with our market-leading delivery times

1

770 Jacket | 775 Trouser  
Version 21\_01





## Garments your team will appreciate

Your team will take it as given that their garment will give them the protection they need. But what they will notice is how jam-packed with features these garments are and how comfortable they are to wear and work in.

Years of experience creating firefighter garments, fabric and ergonomics expertise, and vast amounts of insight from our customers have been combined to create our new VALIANT suit.

### The difference is in the detail

Take a closer look at what makes these garments a cut above the rest.

Both the jacket and trousers feature:

- Ergonomic shaped panelling designed to maximise ease of movement and wearer comfort
- Twin needle structural seams deliver added strength
- Abrasion and puncture resistant fabrics at the elbow and knee thanks to Kevlar fibres
- Flame retardant reflective tape tested to more than 50 industrial washes, sewn on with twin needles for added strength and durability
- Glow-in-the-dark, phosphorescent strips to aid location of colleagues in total or near darkness
- Easy-grip material and generous grab tabs on pockets, loops etc for easy use when wearing gloves
- Reinforcement fabric at the sleeve cuff, jacket hem and trouser hem providing better abrasion resistance and garment durability



## The jacket in detail

- Extended back panel ensures coverage of the lower back when bending
- Front storm-guard placket over the zip with strategic Velcro® closure and easy-grip grab tab
- High quality, heavy-duty, FR zip attached to a zip carrier for simple replacement or repair
- Abrasion resistant internal 3D spacer padding on shoulder and back to aid air circulation and increase comfort while wearing BA
- Two large inner pockets made from lightweight fabric
- Inner stud fastening allows easy inspection and repair of the outer shell
- Inner zip allows easy inspection and repair of the moisture barrier
- Mandarin collar with adjustable collar tab for better fit
- Adjustable cuffs with easy-grip grab tabs and knitted inner cuff
- Thumb loops keep the sleeve from riding up
- Bellows radio pocket with flap adjustment to accommodate various radio sizes and antennas both sides
- Sleeve pocket with pen slots and easy-grip grab tab
- Napoleon pocket on left side with whistle loop on the inside
- Pen pocket under the storm-guard
- Rank tab on front storm-guard
- Adjustable torch strap with easy-grip grab tab
- Two microphone loops on upper chest
- Velcro® strip on chest for name and ID
- Collar hanging loop





## The trouser in detail

- Front fastening trouser with high quality fly zip, inner zip guard and protective outer storm-guard (zip design allows quicker repair)
- Removable braces with 3D padding for comfort whilst wearing BA and also quick adjustment



- Side waist adjusters with tunnel elastics ensure the best fit
- 3D spacer pad at the back increases lumbar protection and comfort when wearing BA
- Two large bellows combat pockets on thigh incorporate easy-grip grab tabs and carabiner-style glove hanging loop

- Ergonomic, padded and shaped knee panels with Kevlar puncture resistance also feature removable, internal, washable knee pads for protection and comfort
- Reinforced inner leg sections and leg seam at the ankle add durability to high abrasion areas



## Fabrics

The VALIANT structural fire suit is available in a range of fabric system options, many of which are stock fabrics allowing us to offer industry-leading delivery times. Many of the garment choices incorporate FlamePro’s state-of-the-art,

3D, high durability, high thermal performance system designed and tested to withstand more than 40 industrial washes at 65°C. In addition, the moisture barrier is designed to protect against blood-borne pathogens.

System	Kermel A90*	Tough Plus**	AV9400**	Core FX	PBI MAX 205**
Colour availability	Gold Navy Orange	Gold Navy	Gold Navy	Gold	Gold
Outer shell tensile / tear strength	Mid / Mid	Mid / Mid	High / High	V.High / High	V.High / High
Radiant heat transfer performance	V.High	High	High	High	High
Breathability performance	Good	V.Good	V.Good	V.Good	V.Good
Lead times	6/8 weeks	6/8 weeks	Enquire for details	6/8 weeks	Enquire for details
Notes	Good fabric strength and good breathability for a lower cost fabric. Improved moisture barrier	Good strength and durability, again with a significant increase in breathability. Lightweight system with great colourfastness	Similar breathability to Tough Plus but slightly heavier to provide higher thermal protection and outer shell strength	Even greater durability and strength than AV9400, but slightly lower thermal performance. Still very breathable	Great tensile strength plus fantastic breathability and thermal protection

\* Option is specified with our NEW moisture barrier layer

\*\* Option is specified with our NEW moisture barrier and thermal barrier layers

### Retro-reflective tape options:

- Cotton FR treated
- Cotton FR treated – perforated

This reflective tape option has been tested to continue to perform through more than 50 washes at 60°C.

- Aramid inherent FR
- Aramid inherent FR – perforated

The aramid reflective tape option has been tested to continue to perform through more than 50 industrial wash cycles at 75°C and 100 domestic washes at 60°C.

## Specification information

### EN Standards:

BS EN ISO 13688:2013 – General PPE requirements

BS EN 469:2005\* – Protective clothing for firefighters – Level 2 Xf2, Xr2, Y2, Z2

\* Upgraded certification to BS EN 469:2020 is in progress

### Warranty

1 Year warranty from date of manufacture on structural seams and hardware, subject to fair wear and tear. Modifications or repairs made by an unauthorised specialist will invalidate the warranty.

### Sizing:

We've created male and female blocks for all of our new range so your female firefighters no longer have to compromise with the best male fit.

XS to 4XL together with a range of length options from Extra Short to XX Tall.

This market-leading range of 96 size options minimises the number of suits that will need to be specially made.

**Get in touch now to see a sample or to discuss your requirements.**

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## FLAME PRO

# New technologies for better protection

## 770 Jacket | 775 Trouser Valiant Suit

Fire suits are traditionally composed of 3 layers:

- Outer fabric
- Thermal moisture barrier
- Quilted layer

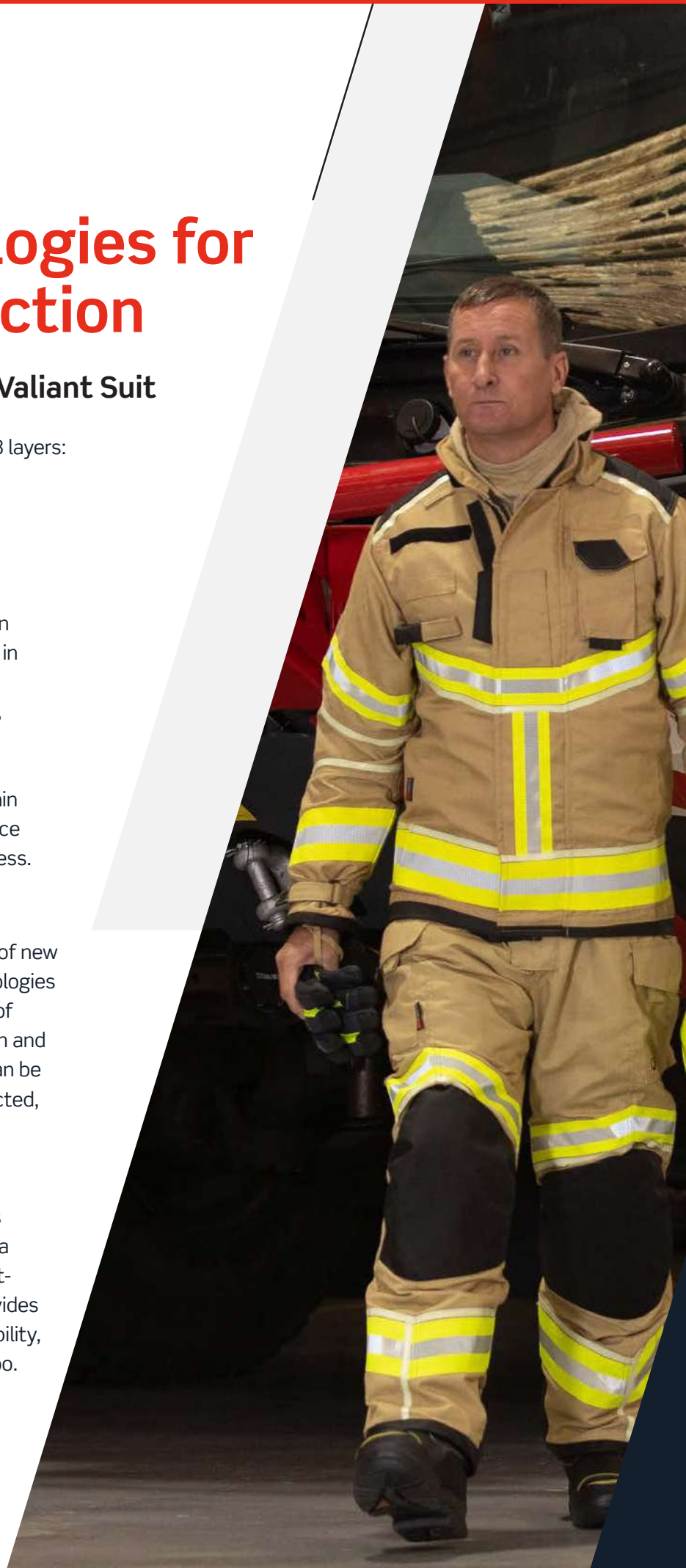
They have tended to be heavy and bulky, concentrating more on protection than on comfort for the wearer. This has resulted in garments that provide good thermal performance and moderate breathability, but minimal moisture transportation.

This can lead to moisture remaining within the suit causing quicker heat transference from the outside and increased heat stress.

### Room for improvement?

We thought so. Our unique combination of new and proven fabric and membrane technologies means that FlamePro's new generation of fire suits deliver both certified protection and unparalleled levels of comfort. So you can be sure your firefighters are not only protected, but are better able to move and do their difficult job too.

We've done away with heavy, bulky suits focused only on protection and created a completely redeveloped range of market-leading turnout gear which not only provides good thermal performance and breathability, but excellent moisture transportation too.



## Moisture barrier innovation

Historically fire suits have been built around the Gore-Tex Fire Blocker moisture barrier - a product that offers good levels of breathability and thermal protection but has not evolved over the last 15 years.

### The challenge:

Create an exceptionally breathable membrane that would also be durable by withstanding 40 washes at 65°C (a sterilisation wash).

And so our search began.

Norafin, the manufacturer of the non-woven product in Fire Blocker, developed a 3D version of the traditional non-woven structure.

Alpex, a renowned membrane laminator, worked to combine this new product with a customised version of the Event membrane. The Event membrane is used by the US military and classified as the most breathable ePTFE membrane in the world.

### The results:

A moisture barrier that:

- Is the same weight as Fire Blocker
- Offers increased breathability, moisture management and high-temperature wash durability
- Delivers better thermal performance against radiant heat



## Internal thermal lining layer innovation

Traditional thermal barriers are a combination of woven fabric, quilted to spun lace or needle felt, with both fabrics being 100% aramids or aramid blends.

This creates a bulky layer which may have high thermal properties but has moderate breathability, lower comfort levels and can trap moisture.

### The challenge:

Create a revolutionary inner layer that reduces bulk, increases breathability and yet still delivers excellent thermal protection.

### The results:

Working with Sofileta, we created a 3D woven structure combining aramid and viscose to create a fabric that delivers:

- Market-leading breathability
- Fantastic moisture transportation
- Great thermal performance without the bulk

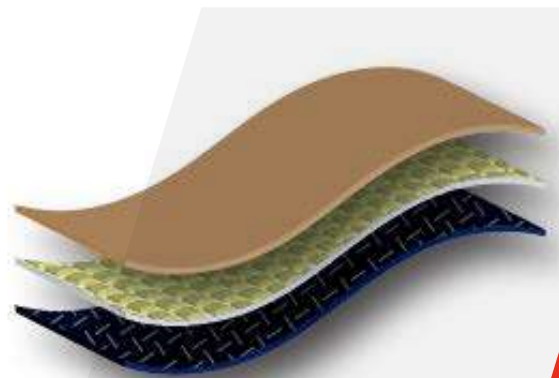
## The garment system for 770 and 775

At FlamePro we have combined this new system of innovative fabrics with cutting-edge design to create a garment that:

- Transports moisture away from the firefighter and offers exceptional breathability
- Gives effective cooling
- Is comfortable, lacks bulk and is quick drying

We offer the 770 jacket and 775 trouser fire suit in five outer shell options, and a range of lengths plus bespoke male and female sizes to create 96 garment sizes to choose from.

All garment system options have been tested and certified to EN 469:2005 Level 2.





## Garment systems

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\* Option is specified with our NEW moisture barrier layer

\*\* Option is specified with our NEW moisture barrier and thermal barrier layers

### Working with you to find the best solution

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## Sizing, Maintenance & Care Guide

### 770 Jacket | 775 Trousers Valiant Suit

#### Size Guide

Size	Size Code	Chest (cm)	Chest (inches)	Waist (cm)	Waist (inches)
Extra Small	XS	84-92cm	33"-36"	68-76cm	27"-30"
Small	S	92-100cm	36"-39"	76-84cm	30"-33"
Medium	M	100-108cm	39"-42"	84-92cm	33"-36"
Large	L	108-116cm	42"-45"	92-100cm	36"-39"
Extra Large	XL	116-124cm	45"-49"	100-108cm	39"-42"
2X Large	2XL	124-132cm	49"-52"	108-116cm	42"-45"
3X Large	3XL	132-140cm	52"-55"	116-124cm	45"-49"
4X Large	4XL	140-148cm	55"-58"	124-132cm	49"-52"

#### Fit Guide

Size	Height (cm)	Height (feet)	Inside Leg (cm)	Inside Leg (inches)
Extra Short	156-164cm	5'2"—5'5"	68cm	27"
Short	164-172cm	5'5"—5'8"	73cm	29"
Regular	172-180cm	5'8"—5'11"	78cm	31"
Tall	180-188cm	5'11"—6'2"	83cm	33"
Extra Tall	188-196cm	6'2"—6'5"	88cm	35"
XX Tall	196-204cm	6'5"—6'8"	93cm	37"

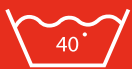
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# Washing, maintenance and repair instructions

We recommend care and maintenance in line with BS 8617 which can be obtained from BSI shop ([shop.bsigroup.com](http://shop.bsigroup.com)).



**Washing Machine**  
40 degrees



**Tumble Dry Settings**  
Two dot: Mid  
Temperature



**Ironing**  
Two dot: High  
temperature



**Dry Cleaning**  
P: Dry cleaning with  
Perchloroethylene



**Do Not Bleach**

## General PPE Maintenance Guidelines

- Wash the PPE regularly using specially adapted programs for contaminated emergency clothing
- The garments should be cleaned after incidents where they have been affected by fire gases, or if they have been soiled by soot, the by-products of combustion, blood, body fluids, tar, fuel, resin, paint, acid or other dangerous substances
- Contaminated clothing should be transported so that gases are enclosed
- Contaminated clothing should be cleaned separately from other garments
- Do not hang the garment in direct sunlight as UV radiation will eventually weaken the outer fabric
- Lubricate the zip if it doesn't feel smooth

## Before washing

- Ensure all zips within the garments are fastened, including inspection zips on the inside of the garment
- Ensure all Velcro® closures are fastened
- Ensure all buttons are closed
- Ensure all pockets are empty
- Remove any detachable ID tags
- Remove all carabiner snap hooks
- Relax any adjustable closures, typically in the cuff, collar, ankle or waist

- Check fluorocarbon finish before each wash by using a spray test. Re-apply impregnation if needed. Always re-do the impregnation after chemical cleaning

## After washing and drying

- Ensure closures are functioning after wash
- Ensure the fit of garment is still suitable, the garment is not too loose or close fitting
- Check there is a sufficient overlap between jacket and trouser when performing stretching movements of legs and arms
- Make sure there is no damage or soiling
- The garments should be dry on the inside and outside
- Perform a spray test to ensure the fluorocarbon finish is functioning
- Check seam integrity and for broken stitches
- Check reflective tape condition

## Important Notes

- Ensure cleaning is performed by a trained specialist, do not clean in a private household
- Follow product care label instructions
- Do not use domestic washing detergents, powders, softeners or whitening agents
- Do not use a tumble drier
- Do not iron retro-reflective tape
- Do not wash with combustible materials



## Fluorocarbon re-impregnation

The protective clothing should be re-impregnated regularly using a fluorocarbon resin-based treatment. We recommend re-impregnating the finish after five washing and drying cycles. You may need to do it more often depending on how the garment is used, so we recommend checking the finish using a spray test before each wash.

To test, simply spray some water over the garment, if the water is absorbed into the fabric and does not drip off then re-apply the fluorocarbon finish. The re-impregnation can be done easily by adding the right impregnation product to the last of the rinsing water in the washing process.

## Repairs

The garment should be inspected regularly for any damage. Repairs should be performed by a trained specialist. Do not modify the garment as this might affect the protection it offers. Any repair or modification made by an unauthorised service centre will void the warranty. We recommend you buy a new suit if the repair costs exceed 50% of replacement costs. Get in touch for advice.

## Storage

Store the garment in dry conditions, not in direct sunlight.

Do not store in airtight containers or vacuum packed. Do not store at temperatures less than -32°C or above 82°C. Do not store in contact with contaminants such as (but not limited to) oils, solvents, acids or alkalis.



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