



**KFlame**

**INHERENT FLAME  
RETARDANT FABRICS**



**QUALITY THAT WORKS**

**K-FLAME BY KLOPMAN**  
**EXCEPTIONAL PROTECTION,**  
**DURABILITY AND COMFORT.**



# THE MOST COMPLETE RANGE ON THE MARKET

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K-Flame is the pride of Klopman's protectivewear solutions. Fabrics manufactured with the highest quality standards and to withstand repeated high-temperature industrial laundering. And most of all, fabrics developed specifically for the end users' need to work at the highest level of comfort, health and safety.

Klopman's K-Flame range is available in two different fabric compositions, to meet every possible market need:

## **K-FLAME PRO**

Based on modacrylic, the K-Flame Pro range combines efficiency and performance in different fabric weights: from 140 g/m<sup>2</sup> to 320 g/m<sup>2</sup>. The 140 gm<sup>2</sup> version is usually used as lining for FR garments. The 320-grams version gives the highest class of protection for welding, according to ISO 11611 and to ISO 11612 D1 aluminium and E2 iron metal splash protection. K-Flame Pro 140, 175, 265 and 320 can be washed industrially (ISO 15797) and are available in High Visibility Yellow and, if required, Pro 265 and 320 with chemical splash protection.

## **K-FLAME XTRA**

Available in 165, 180, 245 g/m<sup>2</sup> and based on aramid, the K-Flame Xtra range guarantees best-in-class fibre solutions to give workers incomparable protection levels from heat and flame, electric arc and static control.

The material composition features the best possible moisture management, which means good levels of comfort, especially in tropical climate conditions.

K-Flame Pro and Xtra can be also provided in a laminated and softshell version.

# K-FLAME FABRICS ARE DESIGNED TO ENHANCE THE EVERYDAY LIFE OF PEOPLE IN THE TOUGHEST WORKING CONDITIONS.

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K-Flame is Klopman's range of inherently Flame Retardant fabrics, conceived to offer resistance to heat, flame and welding, while also supplying antistatic and electric arc protection.

K-Flame range guarantees everything a good fabric should have:

INHERENTLY SAFE:  
PERMANENT PROTECTION  
FOR THE WEARER



HEAT AND FLAME RESISTANT,  
ALUMINIUM SPLASH PROTECTION, STATIC CONTROL  
& ELECTRIC ARC PROTECTION AND WELDING



VERY RESILIENT  
AND DURABLE



HIGH VISIBILITY YELLOW AND CHEMICAL  
SPLASH OPTIONS AVAILABLE



INDUSTRIALLY  
LAUNDERABLE



EXTREMELY  
COMFORTABLE





## BEST-IN-CLASS HEAT STRESS MANAGEMENT

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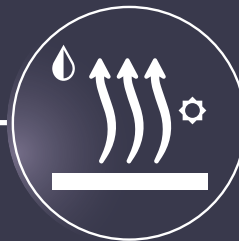
LIGHTWEIGHT



HIGH PROTECTION



TRANSPIRANT



SOFT ON THE SKIN



HIGH SWEAT ABSORPTION



HEAT & COMFORT TESTS AVAILABLE.



## K-FLAME PRO

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# MODACRYLIC PERFORMANCE

K-Flame Pro inherently Flame Retardant fabrics are the result of extensive research by the Klopman Research & Development team. They represent a major breakthrough in the market, thanks to their perfect balance of protection, comfort, strength and durability.

Exceptional safety (including welding and aluminium splash protection) together with best-in-class strength performance (tear strength, tensile strength, abrasion resistance and pilling), makes this fabric the best choice for both garment manufacturers and industrial laundries.

Based on Modacrylic, K-Flame Pro is an extremely reliable solution with no compromise for the end user and wearer.

# FEATURES

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**EXTREMELY STRONG & RESILIENT FABRIC**

**IDEAL FOR HOT ENVIRONMENTS AS IT IS THE MOST TRANSPIRANT**

**FABRIC AMONG ITS COMPETITORS**

(excellent water vapour absorbency, the wearer feels cooler and more comfortable)

**STATIC CONTROL, WELDING & ELECTRIC ARC PROTECTION**

**HIGH VISIBILITY AND CHEMICAL SPLASH OPTIONS AVAILABLE**

**INDUSTRIAL LAUNDERABILITY AT 75°**

**AVAILABLE ALSO AS LAMINATE AND SOFTSHELL**



## TEAR & TENSILE STRENGTH

The tear strength results of K-Flame Pro are very positive compared to similar products in the market, even after repeated washes. The tensile strength demonstrated by K-Flame Pro is much higher than others, reaching nearly double the values in some fabric weights.



## PILLING

The tear strength results of K-Flame pilling grade are very good compared to similar products in the market, as it reaches grade 4.



## WATER VAPOUR RESISTANCE & SWEAT TRANSPORT

K-Flame PRO 175 guarantees the lowest level of water vapour resistance and the highest sweat transport values among its competitors. The result is a fabric that helps the wearer to feel cooler even in hot and humid conditions, due to its impressive breathability.

## K-FLAME PRO FACTS & FIGURES

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### EXTREMELY DURABLE AND COST-EFFECTIVE

K-Flame Pro's strength test results show how the fabric is more resilient compared to other products in the market, ensuring a long-lasting life for garments. Of course, their colour consistency and resistance is in line with Klopman's highest standards. The result is a cost-effective, affordable solution without compromising comfort and security to the wearer.

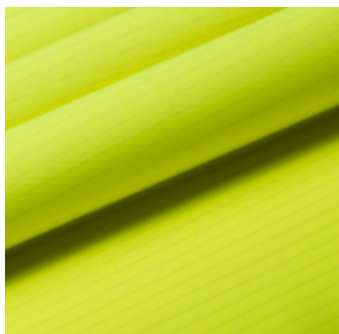
### VERSATILITY FOR THE MOST CHALLENGING WORKING ENVIRONMENTS

The superior performance of K-Flame fabrics means they satisfy the needs of numerous industrial sectors, from the petrochemical to the offshore industry, from iron and steel to chemicals and mining. They are suitable for multiple applications, including other sectors such as transport of hazardous goods, energy, glass and ceramic industry, transport, utilities, rail and maintenance.

### AVAILABLE IN LAMINATED VERSION

The garment can have a unified look and appearance even for outdoor wear, thanks to K-Flame Pro

#### K-FLAME PRO LAMINATE & SOFTSHELL



##### K-Flame Pro 175 Laminate

K-Flame Pro 175 Laminate is a lightweight fabric ideal for many end-use applications, as it combines multi-risk protection properties with foul weather properties. It offers resistance to heat and flame (EN ISO 11612), while also supplying antistatic protection (EN1149-5). In addition, K-Flame Pro 175 Laminate is compliant with EN343 standard to ensure protection against precipitation as rain or snow, fog and ground humidity. Suitable for industrial laundering, K-Flame Pro 175 Laminate is available in High Visibility Yellow and/or with chemical splash protection (EN 13034 Type 6) and in a softshell version.



##### K-Flame Pro 175 Softshell

K-Flame Pro 175 Softshell three-layer laminate is a comfort and light fabric with a waterproof, windproof and breathable membrane. The fabric offers protection against Heat and Flame (ISO 11612), Electric arc (IEC 61482-2), Antistatic (EN 1149-5) and Chemical splash (EN 13034 Type 6)





NEW

**K-FLAME PRO FLEX 320**

# COMFORT MEETS PROTECTION

K-Flame Pro Flex 320 is the new high-performance Flame-Retardant fabric with stretch properties.

The fabric includes the XLANCE fibre in the blend an innovative and advanced elastomeric fibre that bring new levels of performance guaranteeing the wearer maximum protection together with superb comfort and freedom of movement.

With a medium weight of 320 g/m2, this fabric's characteristics make it suitable for many industry applications.

K-Flame Pro Flex 320 combines efficiency and performance with exceptional comfort.

## FEATURES

**MAXIMUM PROTECTION AND COMFORT FOR THE WEARER**





**EXTREME STRETCHABILITY WITH A FAST RECOVERY**

**EASY CARE**

## TECHNICAL INFORMATION

FABRIC	WEIGHT	CERTIFICATION FULFILMENTS		CARE INSTRUCTIONS
K-Flame Pro 175	175 g/m <sup>2</sup>	EN ISO 11612 A1 B1 C1 F1 EN ISO 14116 IEC 61482-1-1 IEC 61482-2 EN 1149-3 EN ISO 20471 (H.V.Yellow)		
K-Flame Pro 265 K-Flame Pro 265 Hydro	265 g/m <sup>2</sup>	EN ISO 11612 A1 B1 C1 E1 F1 EN ISO 14116 EN ISO 11611 IEC 61482-1 -1 IEC 61482-2 EN 1149-3 EN 13034 (Hydrofoil version) EN ISO 20471 (H.V.Yellow)	 	
K-Flame Pro 320 Weld 1 K-Flame Pro 320 Weld 1 Hydro	320 g/m <sup>2</sup>	EN ISO 11612 A1 B1 C1 D1 E2 F1 EN ISO 14116 EN ISO 11611 IEC 61482-1-1 IEC 61482-2 EN 1149-3 EN 13034 (Hydrofoil version) EN ISO 20471 (H.V.Yellow)	 	
K-Flame Pro 320 Weld 2 K-Flame pro 320 Weld 2 Hydro	320 g/m <sup>2</sup>	EN ISO 11612 A1 B1 C1 D1 E2 F1 EN ISO 14116 EN ISO 11611 IEC 61482-2 EN 1149-3 EN 13034 (Hydrofoil version) EN ISO 20471 (H.V.Yellow)	 	
K-Flame Pro Flex 320 <b>STRETCH</b>	320 g/m <sup>2</sup>	ISO 11612 A1 B1 C1 E1 F1 ISO 14116 ISO 11611 EN 1149-3 IEC 61482-1-1 IEC 61482-1-2		Standard home Chlorine bleach should not be used
K-Flame Pro 175 2L	210 g/m <sup>2</sup>	EN ISO 11612 A1 B1 C1 F1 IEC 61482-1-1 IEC 61482-2 EN 1149-3 EN 13034 EN 343		
K-Flame Pro 175 Softshell	460 g/m <sup>2</sup>	EN ISO 11612 A1 B1 C1 F1* IEC 61482-1-1* IEC 61482-2* EN 1149-3* EN 13034*		

\*Expected pass

FABRIC	WEIGHT	CERTIFICATION FULFILMENTS		CARE INSTRUCTIONS
K-Flame Pro 140	140 g/m <sup>2</sup>	EN ISO 14116		
K-Flame Pro A+ 180	180 g/m <sup>2</sup>	NFPA 2112 EN ISO 11612 A1 B1 C1 F1 ASTM F1959		Standard home Chlorine bleach should not be used
K-Flame Pro A+ 200	200 g/m <sup>2</sup>	NFPA 2112 EN ISO 11612 A1 B1 C1 F1 ASTM F1959 EN ISO 20471 (H.V.Yellow)		Standard home Chlorine bleach should not be used



## **K-FLAME EXTRA**

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# ARAMID PROTECTION

Kloppman K-Flame Xtra inherently Flame Retardant fabrics (available in 165, 180 and 245 g/m<sup>2</sup> and softshell and laminated versions) are specially developed to offer exceptional safety performances and comfort to the wearer.

The aramid fibre that make up the fabric guarantees non-heat-conductivity, no melting point and low flammability, ensuring strong fabric integrity and a high level of safety in all working situations.

The structure of the fabric does the rest, especially in moisture management, which means wearers remain comfortable even in tropical conditions.

## FEATURES

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**VERY DURABLE WITH SUPER-SOFT FEEL**

**HIGHEST PROTECTION EVEN IN THE LIGHTEST WEIGHT**

**INHERENT FLAME RESISTANCE FOR PERMANENT PROTECTION**

**EXTREMELY COMFORTABLE DUE TO THE INTELLIGENT FIBRE BLEND**

**SHRINKAGE VALUES AFTER 50 CARE CYCLES PROVE A FABRIC DIMENSIONAL STABILITY LIKE NO OTHER ON THE MARKET**

**IDEAL FOR HOT ENVIRONMENTS AS THE FABRIC IS VERY SMOOTH, BUT NOT TOO TIGHT ON THE SKIN, SO THE WEARER FEELS MORE COMFORTABLE**

**AVOIDS SKIN IRRITATIONS REACHING THE HIGHEST VALUES**

**ABSORBS SWEAT FASTER THAN ANY OTHER**



### **ABRASION RESISTANCE**

The tear strength results of K-Flame Pro are very positive compared to similar products in the market, even after repeated washes. The tensile strength demonstrated by K-Flame Pro is much higher than others, reaching nearly double the values in some fabric weights.



### **TENSILE STRENGTH**

The tear strength results of K-Flame pilling grade are very good compared to similar products in the market, as it reaches grade 4.



### **SOFTNESS ON THE SKIN & SWEAT UPTAKE**

K-Flame Xtra 165 after 1 wash is the best in class for softness on the skin compared to similar products on the market. It also absorbs the sweat quickly like no other, making the fabric ideal for hot environments as it is very smooth, fresh and not too tight on the skin.

## FACTS AND FIGURES

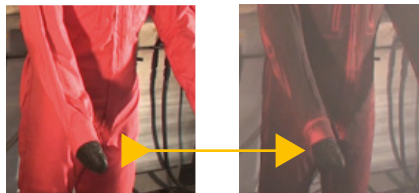
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### BEST-IN-CLASS PROTECTION

K-Flame Xtra guarantees the highest standards of resistance to heat and flame. In the industry-standard mannequin burning test, the K-Flame Xtra 165 achieved the lowest heat shrinkage, outperforming the competitors. Moreover, in tests where the garment is exposed to a three-second flash fire, the average of K-Flame Xtra 165 2nd

and 3rd degree burn is 11,7 % - as shown, whereas 3rd degree burning is < 4%

K-FLAME XTRA 165 MANNEQUINE TEST



### VERY DURABLE

Even when it comes to durability, the K-Flame Xtra range ensures exceptional performance. Due to its construction and blend, garments made out of K-Flame Xtra 245 have a durability equivalent of three times more wear-time compared to other products on the market, a result of huge importance both for cost-effectiveness and imagewear.

### HIGH IMPACT ON END USER EXPERIENCE: EXCEPTIONAL COMFORT

When it comes to wearer comfort, K-Flame Xtra has no equals. The flame-retardant viscose of the blend makes the fabric extremely soft and comfortable, while the whole composition ensures very good moisture management and freshness for the skin, avoiding skin irritations.

### LIGHTWEIGHT RANGE WITH MAXIMUM SECURITY

K-Flame Xtra range is composed mostly of lightweight fabric solutions. These are particularly suitable for hot and humid climates as they guarantee a combination of high performance and protection while satisfying the end user's need for health and comfort.



## TECHNICAL INFORMATION

FABRIC	WEIGHT	CERTIFICATION FULFILMENTS		CARE INSTRUCTIONS
K-Flame Xtra 165	165 g/m²	EN ISO 11612 A1 A2 B1 C1 F1 NFPA 2112 EN 1149-3 IEC 61482-1-2		Standard home Chlorine bleach should not be used
K-Flame Xtra 180	180 g/m²	EN ISO 11612 A1 A2 B1 C1 F1 NFPA 2112 EN 1149-3 IEC 61482-1-1		Standard home Chlorine bleach should not be used
K-Flame Xtra 245 K-Flame Xtra 245 Hydro	245 g/m²	EN ISO 11612 A1 A2 B1 C1 E1 F1 ISO 11611 IEC 61482-2 IEC 61482-1-1 EN 1149-3 EN 13034 (Hydro version)		
K-Flame Xtra 245 Laminate	280 g/m²	EN ISO 11612 A1A2 B1 C1 E1 F1* ISO 11611* EN 1149-3* EN 13034* EN 343*		
K-Flame Xtra 245 Softshell	515 g/m²	EN ISO 11612 A1 A2 B1 ISO 11611 IEC 61482-2 EN 1149-3 EN13034		

\*Expected pass

### K-FLAME XTRA LAMINATE & SOFTSHELL



#### K-Flame XTRA 245 Laminate

K-Flame Xtra 245 Laminate is a product that offers a very high level of safety, including foul weather protection, without compromising comfort or garment appearance. The fabric, weighing 280 g/m², ensures protection against Heat and Flame (ISO 11612), Electric arc (IEC 61482-2), Welding (ISO 11611), Antistatic (EN 1149-5), Foul Weather (EN 343 – Class 3/Class 3) and Chemical splash (EN 13034 Type 6).



#### K-Flame XTRA 245 Softshell

K-Flame Xtra 245 Softshell three-layer laminate is developed with a waterproof, windproof and breathable membrane that, in combination with the inherently flame-retardant fleece, ensures a smooth and multi-risk protection fabric with waterproof properties. The fabric, with 515 g/m² of weight, ensures protection against Heat and Flame (ISO 11612), Electric arc (IEC 61482-2), Welding (ISO 11611), Antistatic (EN 1149-5) and Chemical splash (EN 13034 Type 6).

# NFPA

## CERTIFIED FABRIC RANGE

The protection of the worker is a priority all over the world. The level of protection must meet the highest industry standard as the well-being of the people an indisputable priority. Although the way this is measured might vary according to the different regulations that apply to the single country. NFPA 2112 is the standard applied in the USA and mostly used across Middle East, Asia and Australia.

**NFPA 2112 - Flame-Resistant Clothing for Protection of Industrial Personnel against Short-Duration Thermal Exposures from Fire. This Standard specifies the minimum design, performance, certification requirements, and test methods for flame-resistance garments, shrouds/hoods/balaclavas and gloves for use in areas at risk from short duration of thermal exposure from fire.**

Klopman's fabrics certified according to NFPA 2112 standard are tested and proven to perform according to the certification level. K-Flame Pro A+ 180 and K-Flame Pro A+ 200 performing to the high requirements in the standard for flame resistance after 100 wash and care cycles which provides the wearer high safety as well as durability, strength, and comfort. Higher standards in both design quality and FR performance are what make Klopman fabrics leader of fabric supply in every challenging worksite around the globe. Our range of fabrics is made of both Inherent and treated solution, all lightweight, all performing at the highest level of comfort and protection.

FABRIC	WEIGHT	CERTIFICATION FULFILMENTS		CARE INSTRUCTIONS
K-Flame Xtra 165	165 g/m <sup>2</sup>	NFPA 2112 EN ISO 11612 A1 A2 B1 C1 F1 EN 1149-3 IEC 61482-1-2	  	Standard home Chlorine bleach should not be used
K-Flame Xtra 180	180 g/m <sup>2</sup>	NFPA 2112 EN ISO 11612 A1 A2 B1 C1 F1 EN 1149-3 IEC 61482-1-1	  	Standard home Chlorine bleach should not be used
K-Flame A+ 180	180 g/m <sup>2</sup>	NFPA 2112 EN ISO 11612 A1 B1 C1 F1 ASTM F 1959 EN ISO 20471 (H.V.Yellow)*	 	Standard home Chlorine bleach should not be used
K-Flame A+ 200	200 g/m <sup>2</sup>	NFPA 2112 EN ISO 11612 A1 B1 C1 F1 ASTM F 1959 EN ISO 20471 (H.V.Yellow)	  	Standard home Chlorine bleach should not be used
Jupiter FR	240 g/m <sup>2</sup>	NFPA 2112 EN ISO 11612 A1 A2 B1 C1 E1 F1 EN ISO 11611 IEC 61482-2 ASTM F 1959 EN ISO 20471 (H.V.Yellow)	   	
Jupiter 4-Stat	210 g/m <sup>2</sup>	NFPA 2112 EN ISO 11612 A1 A2 B1 C1 E1 F1 EN ISO 11611 EN 1149-3 IEC 61482-2* ASTM F1959* EN ISO 20471 (H.V.Yellow)*	    	

\*Expected pass

## **K-FLAME PRO AND XTRA ARE IDEAL FOR:**

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- **Petrochemical and refinery industry**
- **Offshore (oil and gas platforms)**
- **Petrol stations**
- **Welding industry**
- **Chemical industry**
- **Transport of hazardous goods**
- **Energy and power**
- **Glass and ceramic industry**
- **Mining industry**
- **Utilities**
- **Railway**
- **Maintenance work**







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