



KFlame

**INHERENT FLAME
RETARDANT FABRICS**



QUALITY THAT WORKS

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



THE MOST COMPLETE RANGE ON THE MARKET

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/m² to 320 g/m². The 140 g/m² 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 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

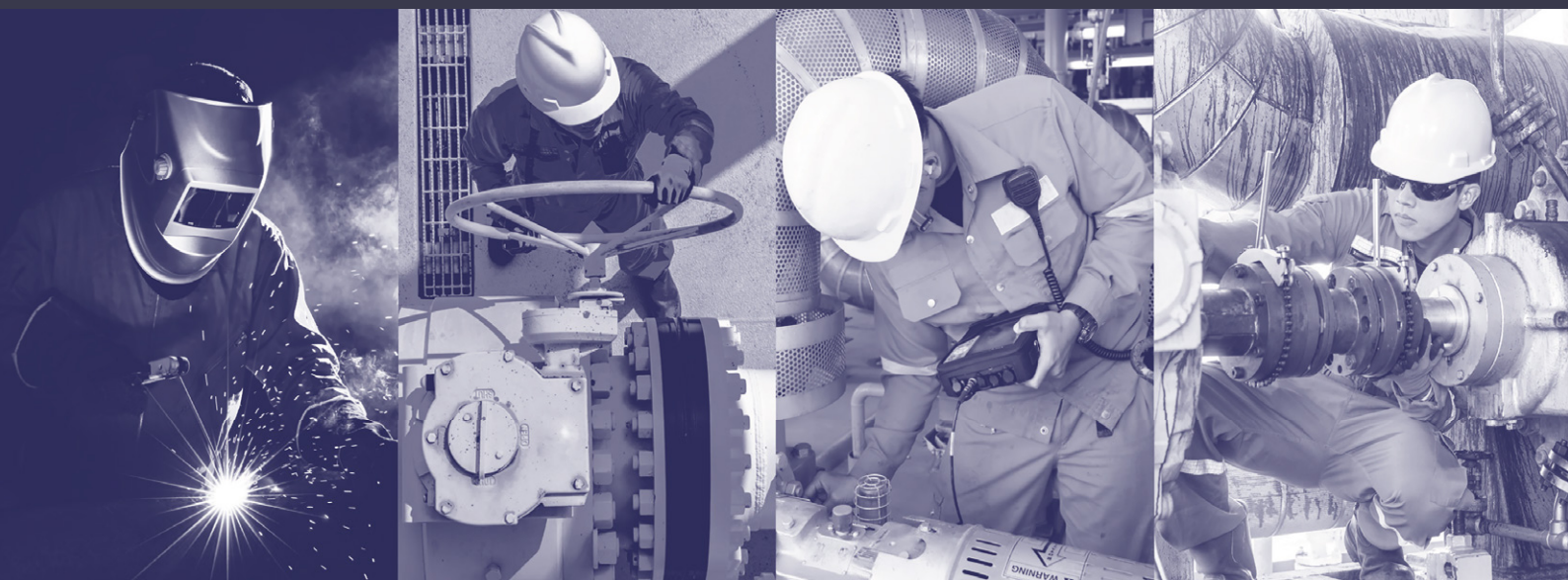
Available in 165, 180, 245 g/m² and based on aramid, the K-Flame Xtra range guarantees best-in-class fibre solutions to give workers incomparable protection levels from heat and flame, electric arc and static control.

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 PRO AND XTRA ARE IDEAL FOR:

- 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



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

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



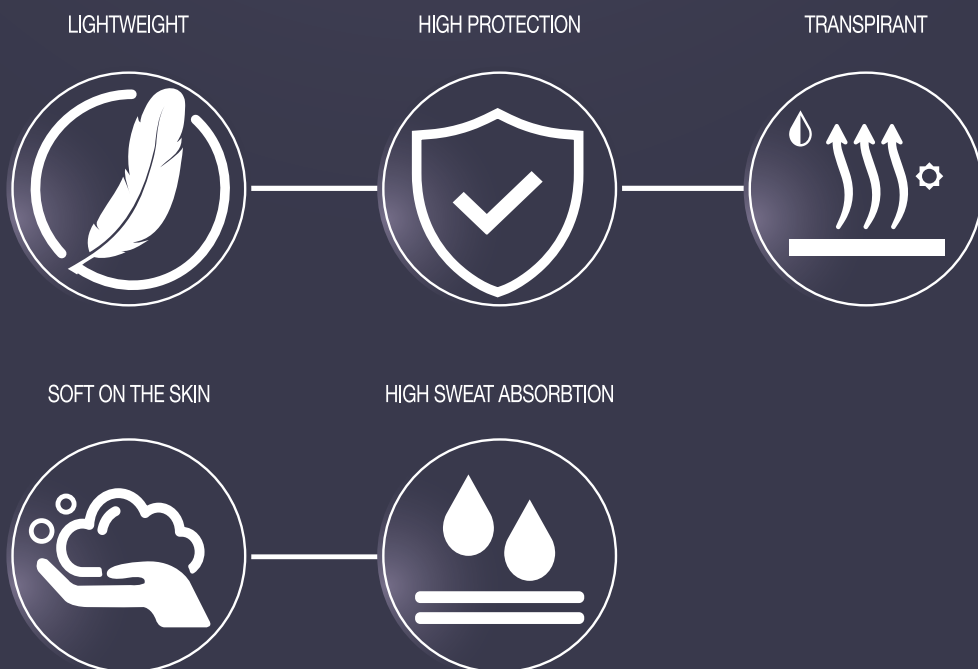
EXTREMELY
COMFORTABLE



BEST-IN-CLASS HEAT STRESS MANAGEMENT

Heat stress is the largest issue safety managers face for worker compliance. If the garment is too heavy, uncomfortable, too hot or doesn't cool well enough, workers are less likely to wear them compliantly.

Which increases the risk of danger. The kind of workwear worn can help. K-Flame range guarantees everything a good fabric should have:



HEAT & COMFORT TESTS AVAILABLE.



K-FLAME PRO

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

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°C

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

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.

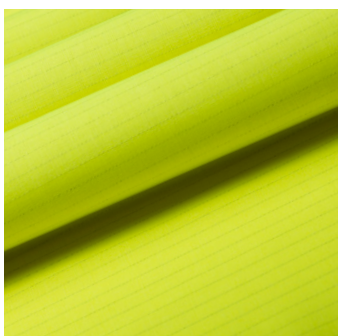
VERSATILITY FOR THE MOST CHALLENGING WORKING ENVIRONMENTS

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

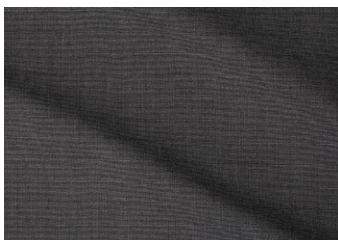
The garment can have a unified look and appearance even for outdoor wear, thanks to K-Flame Pro

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)



K

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	Certifications	Care Instructions
♦ K-Flame Pro 140	140 g/m²	EN ISO 14116		
♦ K-Flame Pro 175	175 g/m²	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/m²	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/m²	EN ISO 11612 A1 B1 C1 D1 E1 F1 EN ISO 14116 EN ISO 11611 IEC 61482-1-1 IEC 61482-2 EN 1149-3 EN 13034 (Hydrofoil version) ISO EN 20471 (H.V. Yellow)	       	
♦ K-Flame Pro 320 Weld 2 K-Flame Pro 320 Weld 2 Hydro	320 g/m²	EN ISO 11612 A1 B1 C1 D1 E1 F1 EN ISO 14116 EN ISO 11611 IEC 61482-2 EN 1149-3 EN 13034 (Hydrofoil version) ISO EN 20471 (H.V. Yellow)	       	
♦ K-Flame Pro Flex 320 STRETCH	320 g/m²	ISO 11612 A1 B1 C1 D1 E1 F1 ISO 14116 ISO 11611 EN 1149-3 IEC 61482-1-1 IEC 61482-1-2 ISO EN 20471 (H.V. Yellow)	       	Standard home Chlorine bleach should not be used
♦ K-Flame Pro 320 Denim	320 g/m²	EN ISO 11612 A1 B1 C1 D1 E1 F1 EN ISO 14116 EN ISO 11611 IEC 61482-1-1 IEC 61482-2 EN 1149-3 EN 13034 (Hydrofoil version) ISO EN 20471 (H.V. Yellow)	       	
♦ K-Flame Pro 175 2L	210 g/m²	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/m²	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	Certifications	Care Instructions
♦ K-Flame Pro A+ 180	180 g/m²	NFPA 2112 EN ISO 11612 A1 B1 C1 ASTM F1959	 	Standard home Chlorine bleach should not be used
♦ K-Flame Pro A+ 200	200 g/m²	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 XTRA

ARAMID PROTECTION

Klopman K-Flame Xtra inherently Flame Retardant fabrics (available in 165, 180 and 245 g/m² 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

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

K-Flame Xtra is also tested for its good abrasion resistance qualities.



TENSILE STRENGTH

The tensile strength after 50 cycles demonstrates how K-Flame Xtra is right in line with the best performance in the market



SOFTNESS ON THE SKIN & SWEAT UPTAKE

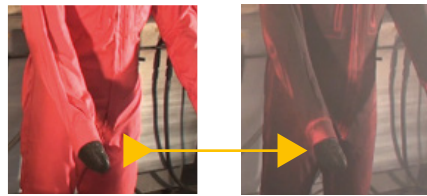
K-Flame Xtra 165 after 1 wash is the best in class for softness on the skin compared to similar products on the market. It also absorbs the sweat quickly like no other, making the fabric ideal for hot environments as it is very smooth, fresh and not too tight on the skin.

FACTS AND FIGURES

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 image wear.

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

K-Flame Xtra, available in 165, 180 and 245 g/m² and in softshell and/or laminate versions, based on aramid guarantees best-in class fibre solutions to assure workers incomparable protection levels from heat and flame, electric arc and static control.

Fabric	Weight	Certification Fulfilments	Certifications	Care Instructions
◆ K-Flame Xtra 165	165 g/m ²	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 ²	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 Xtra 245 K-Flame Xtra 245 Hydro	245 g/m ²	EN ISO 11612 A1 A2 B1 C1 E1 F1 ISO 11611 IEC 61482-2 IEC 61482-1-1 EN 1149-3 EN 13034 (Hydrofoil version)		
◆ K-Flame Xtra 245 Laminate	280 g/m ²	EN ISO 11612 A1 A2 B1 C1 E1 F1* ISO 11611* EN 1149-3* EN 13034* EN 343*		Standard home Chlorine bleach should not be used
◆ K-Flame Xtra 245 Softshell	515 g/m ²	EN ISO 11612 A1 A2 B1 C2 E3 F2 ISO 11611 IEC 61482-2 EN 1149-3 EN 13034		Standard home Chlorine bleach should not be used

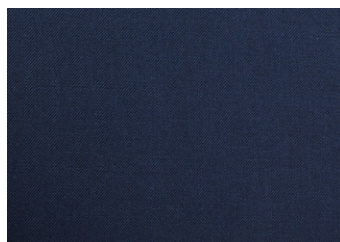
*Expected pass

K-FLAME XTRA LAMINATE & SOFTSHELL



K-Flame XTRA 245 Laminate

K-Flame Xtra 245 Laminate is a product with a very high level of safety, including foul weather protection, without compromising comfort or garment appearance. The fabric, weighing 280 g/m², is conceived to protect against Heat and Flame (ISO 11612), Electric arc (IEC 61482-2), Welding (ISO 11611), Antistatic (EN 1149-5), Foul Weather (EN 343) 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).



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