

150 YEARS OF TEXTILE EXCELLENCE

[PROTECTIVEWEAR]

FABRICS

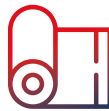


150 YEARS OF TEXTILE EXCELLENCE

GROUP FACTS & FIGURES



Market leader
in the European workwear market



The group overall produces more than
50 millions metres of fabric annually



The group counts
over 600 employees



Fabrics sold and distributed
in more than 70 countries



Pionier in sustainability



KLOPMAN INTERNATIONAL



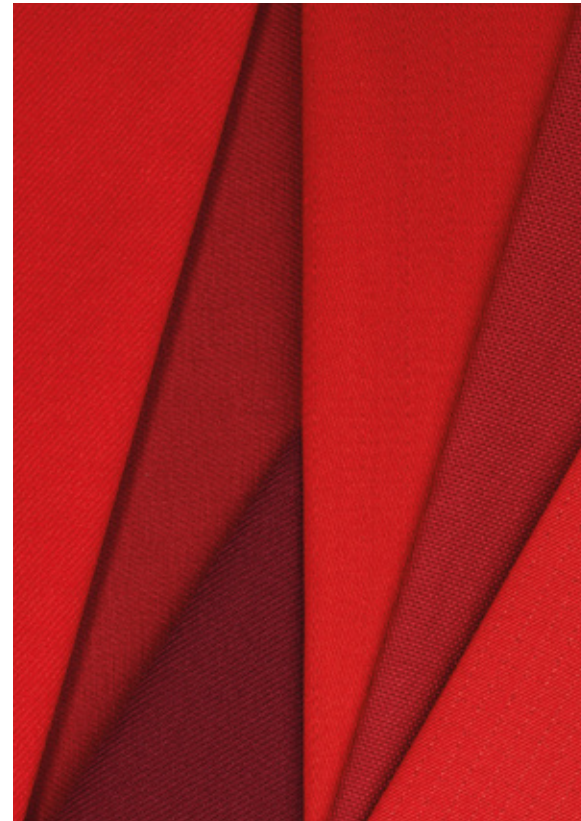
Klopmann International has been a European leader in the production of technical fabrics for workwear for over 55 years, with three business areas dedicated to the different fields of application: Workwear, Protectivewear and Corporatewear.

The company was the first to introduce the use of polyester/cotton blend, gaining a third of the European market in some sectors and now producing fabrics in over 170 styles and different colour shades.

Klopmann has its headquarters and production site in Frosinone, Italy, with a plant covering 70,000 square metres.

The company has commercial branch offices in Dusseldorf, Lyon, Borås (Sweden), Moscow, Dubai and Bangkok, plus a production site in Jakarta to serve the Asian market directly.

Klopmann has always focused its attention on providing the highest customer service experience, top - quality products with an emphasis on innovation, product responsibility and sustainability.



TDV INDUSTRIES



TDV Industries is a France-based company specialising in the production of high-quality technical fabrics. Founded in 1864, TDV Industries is recognised for its expertise in developing innovative and performance fabric, including those customised for clients' needs.

The company is seen as a pioneer in sustainability for its early commitment to international frameworks such as the United Nations Global Compact, and for its commitment to developing fabrics with improved environmental performance and the most positive possible social and societal impact.

As well as solid experience in fabric production for the workwear sector, TDV is highly regarded in the military sector and in security, police and fire services. The company supplies camouflage fabrics, as well as fabrics for uniforms and personal protective equipment. All fabrics meets the most stringent requirements through the use of advanced technologies and high-quality materials.





◆ K-FLAME PRO 175

175gr - Inherent Flame Retardant
48,5% MAC / 34% Co / 17% PA
/ 0,5% CF
Plain



■ NASHNEW 5

205gr - Inherent Flame Retardant
70% MAC / 20% Co / 9% PA
/ 1% Anti-static
3x1 S Twill



◆ K-FLAME PRO 175 2L

210 gr - Inherent Flame Retardant
2L Laminate - 48,5% MAC
/ 34% Co / 17% PA / 0,5% CF
Membrane: 100% PU
Plain



■ SECURIT AS 240

240gr - Inherent Flame Retardant
Crease resist - Hydrofoil
40% Meta-Aramid / 34% MAC
/ 25% Co / 1% Anti-static
2x1 Z Twill



◆ K-FLAME PRO 265

265gr - Inherent Flame Retardant
48,5% MAC / 34% Co / 17% PA
/ 0,5% CF
2x1 S Twill



◆ K-FLAME PRO 320 WELD2

320gr - Rough backside
Hydrofoil
47% MAC / 32% Co / 20,5% PA
/ 0,5% CF - 3x1 Z Twill



◆ K-FLAME PRO 320

320gr - Inherent Flame Retardant
Hydrofoil
47% MAC / 32% Co / 20,5% PA
/ 0,5% CF - 3x1 Z Twill



◆ K-FLAME PRO FLEX 320

STRETCH 320gr
Inherent Flame Retardant
51,5% MAC / 34,5% Co / 10,5% PA
/ 3% EOL (XLANCE®) / 0,5% CF
3x1 Z Twill



■ SECURIPACK 2/320

320gr - Inherent Flame Retardant
Crease resist - Hydrofoil
54% MAC / 45% Co / 1% Anti-static carbon - Satin 4



■ SECURITHOR

390 gr - Inherent Flame Retardant
Crease resist - Hydrofoil
52% PES FR / 26% MAC / 21% Co / 1% Anti-static - Double face



◆ K-FLAME PRO 175 SOFTSHELL

460gr - Softshell
48% MAC / 34% Co / 17% PA / 1% CF
Plain



Aramid fibre



◆ K FLAME XTRA 165

165gr - Inherent Flame Retardant
45% AR / 45% CV FR / 9% PA / 1% CF
2X1 Z Twill



◆ K-FLAME XTRA 245 2L

280gr - Inherent Flame Retardant
2L Laminate - 35% AR / 30% MAC / 25% Co / 9% PA / 1% CF
Membrane 100% PU
2X1 Z Twill



◆ K-FLAME XTRA 180

180gr - Inherent Flame Retardant
45% AR / 45% CV FR / 9% PA / 1% CF
2X1 Z Twill



◆ K-FLAME XTRA 245 SOFTSHELL

515gr - Softshell
35% AR / 30% MAC / 25% Co / 9% PA / 1% CF
Membrane 100%PU - Fleece 50% MAC / 34% Co / 16% PES
2X1 Z Twill



◆ K-FLAME XTRA 245 HYDRO

245gr - Hydrofoil
35% AR / 30% MAC / 25% Co / 9% PA / 1% CF
2X1 Z Twill



■ COREX 3

340gr - Inherent Flame Retardant
64% CV FR / 35% AR / 1% Anti-static carbon
Satin 8





[MULTIFUNCTIONAL]

◆ MEGATEC-K

150gr - Flame retardant
68% Co / 30% AR / 2% CF
Plain



◆ MEGATEC 250N HV

245gr - Flame retardant
Hydrofoil
75% Co / 24% PES / 1% CF
2X2 Z Twill



■ SECURIPACK 1/280

280gr - Inherent Flame Retardant
Crease resist - Hydrofoil
66% Co / 33% PES
/ 1% Anti-static carbon
Satin 4



◆ MEGATEC 300N

300gr - Flame retardant
Hydrofoil
75% Co / 24% PES / 1% CF
2X2 Z Twill



◆ MEGATEC PLUS

310gr - Flame retardant
Hydrofoil
75% Co / 24% PES / 1% CF
Satin 5/2



◆ MEGATEC 360N

350gr - Flame Retardant
Hydrofoil
75% Co / 24% PES / 1% CF
2x2 Z Twill



■ EUREKASTAT

360gr - Crease resist
Hydrofoil
64% Co / 35% PES / 1% Anti-static carbon
2x2 S Twill





[TREATED FR]

◆ **SATURN FR**
215gr - Flame retardant
100% Co
Rip Stop



◆ **JUPITER FR**
240gr - Flame retardant
100% Co
2x1 S Twill



◆ **BRAVO FR**
250gr - Flame retardant
75% Co / 25% PES
2x2 Z Twill



◆ **ARENA FR**
300gr - Flame Retardant
75% Co / 25% PES
2X2 Z Twill



◆ **SCALA FR**
320gr - Flame Retardant
75% Co / 25% PES
Satin 5/2



◆ **METEOR FR**
335gr - Flame Retardant
100 % Co
3x1 S Twill



◆ **GEMINI FR**
340gr - Flame Retardant
100% Co
Satin 5



■ **SECURIFLAM S310**
340gr - Flame retardant
100% FR Co
Satin 5



■ **SECURISTEEL**
345gr - Flame retardant
80% FR Co / 20% PES
2x2 S Twill



◆ **CHALLENGER 5000 FR**
360gr - Flame retardant
75% Co / 25 % PES
2x2 Z Twill



■ **EUREKA**
360gr - Flame Retardant
65% FR Co / 35% PES
2x2 S Twill



◆ **TECSTONE FR**
375gr - Flame Retardant
Hydrofoil
64.5% Co / 35% PES / 0.5% CF
2x2 Z Twill



◆ **MARS FR**
410gr - Flame Retardant
100% Co
Satin 5



■ **SECURIFLAM 450**
450gr - Flame Retardant
100% FR Co
Moleskin



◆ **NEW CAESAR FR**
470gr - Flame Retardant
100% Co
Satin 5/3





[HIGH VISIBILITY]

◆ **LUMINEX C-LYTE**
180gr - Crease resist
50% Co / 50% PES
Broken Twill



◆ **LUMINEX 270**
270gr - Crease Resist
Hydrofoil
85% PES / 15% Co
Satin 5/3



■ **HIGHLANDS**
240 gr - Crease resist
Hydrofoil
67% PES / 33% Co
3x1 Z Twill



■ **XMAINE 260**
260gr - Crease Resist
70% PES / 27% Co
/ 3% EOL (XLANCE®)
Satin 5



◆ **LUMINEX C-STAT HYDRO**
265gr - Hydrofoil
50% Co / 49.5% PES / 0.5% CF
3X1 Broken Twill



◆ **LUMINEX C2**
230gr - Crease Resist
60% Co / 40% PES
3X1 S Twill



◆ **LUMINEX C50**
270gr - Crease Resist
50% Co / 50% PES
3x1 Broken Twill



■ **HELVETYS
PREMIUM FT**
270gr - Crease Resist
70% R-PES / 30% Co
Ripstop Satin 5



OPTION RECYCLED PES



■ **FLUOLINE 270 5050**
270 gr - Crease Resist
50% Co / 50% PES
Satin 4

OPTION RECYCLED PES



■ **FLUOLINE 270 6733**
270gr - Crease Resist
67% Co / 33% PES
Satin 5



◆ **LUMINEX C50 R-PES**
280gr
Duraclean Fabric Protector
50% Co / 50% R-PES
3X1 Broken Twill



■ **FLUOLINE 300 55/45**
300gr - Crease resist
55% Co / 45% PES
Satin 5



◆ **LUMINEX 310**
310gr - Crease resist
Hydrofoil
85% PES / 15% Co
Satin 5



Sustainable Stretch & High-Vis fabrics



■ XMAINE 230 PC

230gr

85,5% PES / 12% Co / 2,5% EOL (XLANCE®)
Broken Twill



■ XMAINE 280 RPL

280gr - Crease resist

65% R-PES / 32% Lyocell / 3% EOL (XLANCE®)
3x1 S Twill



■ FLUOLINE 270 5050 R-PES

270gr - Crease resist

50% Co / 50% R-PES
Satin 4



◆ LUMINEX FLEX 280

280gr - Crease resist

79.5% PES / 16.5% Co / 4% EOL (XLANCE®)
3x1 Broken Twill



◆ LUMINEX 10CL SR

270gr - Duraclean Fabric Protector

50% Lyocell / 50% PES
3x1 Broken Twill



■ FLUOLINE 300 55/45 PREMIUM FT

300gr - Crease resist

55% Organic & Fairtrade Cotton / 45% R-PES
Satin 5





[ANTISTATIC]



◆ **CONCEPT ESD**
150gr - Crease resist soft
67.5% PES / 31% Co / 1.5% CF
Plain



◆ **TELESTAT PLUS**
175 gr - Crease Resist
68% PES / 31% Co / 1% CF
Plain



◆ **SUPERBANDMASTER
NEGASTAT**
205gr - Crease resist
65 % PES / 34% Co / 1% CF
2X1 Z Twill



◆ **COVERSTAT 210**
210gr - Regular
75% Co / 24% PES / 1% CF
2X2 Z Twill



◆ **SUPERBANDMASTER ESD**
210gr - Crease resist
66.5 % PES / 32% Co / 1.5% CF
2x1 Z Twill



◆ **INDESTRUCTIBLE
NEGASTAT**
240gr - Crease resist
65% PES / 34% Co / 1% CF
2X1 Z Twill



◆ **INDESTRUCTIBLE ESD**
245 gr - Crease resist
66.5% PES / 32% Co / 1.5% CF
2X1 Z Twill



◆ **COVERSTAT 250**
250gr - Regular
75% Co / 24% PES / 1% CF
2X2 Z Twill



◆ **COVERSTAT 300**
305gr - Regular
75% Co / 24% PES / 1% CF
2X2 Z Twill



[BARRIER]



◆ **VEKTRON 3005**
115gr - Pure
98.7% PES / 1.3% CF
2X2 Z Twill





[FOULWEATHER FABRICS]



◆ **DETROIT 2L**
170gr - 2L Laminate
100% PES - Membrane: 100% PU
Plain



◆ **STARFIELD 2L**
275gr - 2L Laminate
65% PES / 35% Co - Membrane 100% PU
Panama IRR



[CHEMICAL PROTECTION]



◆ **NEOSTAT 275**
275gr - Hydrofoil
99.5% PES / 0.5% CF
3X1 Broken Twill



Scan the QR code to check all available
on-line colours for each fabric style

MATERIALS

Aramid

Also known as aromatic polyamide, aramid fibre is a manmade material with outstanding mechanical characteristics as well as heat resistance (up to 200°C – 300°C). It neither flames nor melts. It is what's known as "«inherently flame retardant»". Aramid fibres are the right candidates for fabrics expected to be light and soft at the same time as offering high resistance to heat and flame.

Modacrylic

Modacrylic is an inherently flame-retardant fibre that can be used alone or in blends. It has self-extinguishing properties, and a char barrier works as a shield to minimize fire damage.

It has a very good LOI property value of > 32 (LOI=Limited Oxygen Index)

Polyamide

Polyamide is a light synthetic fibre with outstanding mechanical properties; it is often used in blend with other fibres to boost resistance to abrasion and to tear. For fabrics expected to get dry very fast, polyamide, being non-water absorbent.

Cotton

Cotton is a natural fibre providing comfort and resistance. It is particularly suitable for fabrics in direct contact with the skin, as it is non-allergenic and moisture absorbent. Cotton is a natural fibre that can be treated to be flame-resistant.

FR Viscose

FR Viscose is based on wood-pulp that has been treated to become inherent flame-retardant. This is a man-made cellulosic fibre has flame retardant properties and is extensively used in fabric blends where it provides increased moisture absorption and comfort without compromising on protection.

Viscose

Viscose is an artificial fibre chemically obtained from wood-pulp (cellulose). The fibre is breathable and grants silkiness and softness to fabrics; for that reason viscose is also named «artificial silk».

Polyester

Polyester is a light non-water absorbent strong synthetic fibre. Used in blend with other fibres, it makes fabrics easy to wash and dry. Polyester fibre is long-lasting and resistant to many chemical products.

Antistatic fibres

The proper name should be «conductive fibres» (of electricity) that dissipate electrostatic discharge. They can be composed of polyester or polyamide that has been coated or has a conductive core (copper, carbon, silver ...). There are also metallic conductive fibres (stainless steel).

NORMS & FEATURES

PROTECTION AGAINST HEAT & FLAME

Flame retardant (FR) fabrics and clothing are designed to prevent people in contact with flame and heat from being injured or burned. FR fabrics might char but should neither flame nor burn. Depending on working conditions or industrial fields, different norms can apply.



EN 11612

EN 11612 manages the protection against heat and flame in industrial fields excepted the welding sector. 5 criteria are controlled:

- > Flame spread A1 (method A) or A2 (method B) requires: no flame + no hole + no melt + no flaming or molten debris + no afterglow.
- > Convective heat from the minimal and lowest B1 to the highest B3
- > Radiant heat from the minimal and lowest C1 to the highest C4
- > Aluminium molten splash from the minimal and lowest D1 to the highest D3
- > Cast-iron molten splash from the minimal and lowest E1 to the highest E3
- > Contact heat from the minimal and lowest F1 to the highest F3



EN ISO 14116

The EN ISO 14116 standard specifies fabrics with limited flame spread in order to protect the user from short-term, accidental contact with heat or sparks. The norm classifies the flame spread in 3 categories, index 1 for the least demanding to index 3.

INDEX1	INDEX2	INDEX3
No flame or hole to reach the upper edge of the fabric	No flame or hole to reach the upper edge of the fabric	No flame or hole to reach the upper edge of the fabric
No flaming debris	No flaming debris	No flaming debris
No Afterglow	No Afterglow	No Afterglow
X	No hole formation	No hole formation
X	X	No afterflame > 2s



EN ISO 15384

EN ISO 15384 provides minimum performance requirements for protective clothing designed for use for extended periods during wildland firefighting and associated activities.



NFPA 2112

The NFPA 2112 (National Fire Protection Association 2112) Standard provides minimum requirements for the design, construction, evaluation, and certification of flame-resistant fabrics used in garments for industrial personnel. The standard, mostly used in non-European areas, specifies the minimum performance requirements and tests methods for flame-resistant fabrics and components and the certification is required for garments for use in areas at risk from flash fires.

PROTECTION AGAINST FLAME AND HEAT DURING WELDING



EN 11611

EN 11611 manages protection against flame and heat during welding and allied processes and identifies 2 levels of risks:

- > Class 1: low risks (> 15 molten splash drops and low radiant heat)
 - > Class 2: high risks (> 25 molten splash drops and elevated radiant heat)
- For both levels of risks fabric should not flame, hole formation is forbidden as are molten or flaming debris are excluded, no afterglow is allowed.

ELECTRIC ARC PROTECTION



The IEC 61482-2 standard specifies requirements and test methods applicable to materials and garments for protection against the thermal hazards of an electric arc. An electric arc is a continuous high-voltage electric discharge between conductors generating light and very intense heat. There are two international test methods:

Container test method CEI EN 61482-1-2:

The fabric/garment is exposed to an electric arc constrained in a specific container with a specific electrode arrangement for 0.5 seconds.

- > **APC 1** (Arc Protection Class 1) corresponds to an arc current of 4kA;
- > **APC 2** (Arc Protection Class 2) corresponds to an arc current of 7 kA.

Open arc method CEI EN 61482-1-1:

This test method aims at establishing the ATPV (Arc Thermal Performance Value), EBT (Energy Breakopen Threshold) or the incident energy limit (ELIM) of a fabric. The ATPV is the amount of energy required to cause a second-degree burn. The EBT is the amount of energy that opens the material. ELIM is the numerical value of incident energy below which there is no data point with the amount of heat transmitted through the product reaching the Stoll criteria or with the product exhibiting breakopen.

All these values are expressed in calories per cm². The HAF (Heat Attenuation Factor) is also measured during the test, describing the amount of heat blocked by the fabric.

PROTECTION AGAINST ELECTROSTATIC DISCHARGE:



EN 1149-5

EN 1149-5 is the European Standard for garments. It specifies material and design requirements for electrostatic dissipative protective clothing, used as part of a total earthed system, to avoid incendiary discharges. The requirements may not be sufficient in oxygen enriched flammable atmospheres. The European standard is not applicable for protection against mains voltages.

- > Part 1 (EN 1149-1) measures surface resistivity
- > Part 2 (EN 1149-2) measures cross resistance
- > Part 3 (EN 1149-3) measures the charge decay

ESD PROTECTION

Electrostatic Discharge, or ESD, is a single-event, rapid transfer of electrostatic charge between two objects, usually resulting when two objects at different potentials come into direct contact with each other.



IEC 61340-5-1

IEC 61340-5-1 is a product standard and refers to the general requirement for an ESD control program. ESD can have very short duration high current levels and can cause ignition of flammable materials or damage to electronic components. This method includes garment testing.

PROTECTION AGAINST LIQUID CHEMICAL SPLASH / WATER-OIL SPLASH:



EN 13034

The standard EN 13034 manages protective clothing (Type 6 for overalls or Type PB6 for garments partially covering the body) against low and medium risks of contact with liquid chemicals (i.e. accidental splash or light sprays). Liquid repellency (at least level 3) and liquid penetration resistance (at least level 2) are expected to comply with the norm.

HIGH-VISIBILITY FABRICS



EN 20471

High-visibility fabrics certified for EN ISO 20471 are designed to ensure people are as visible as possible in the workplace. Yellow, orange-red and red are the 3 official Hi-Vis colours and the vast majority Hi-Vis colours produced by Klopman & TDV Industries comply with EN 20471 even after 50 industrial washes conforming to ISO 15797 at 75°C.

PROTECTION AGAINST LIQUID PHYTOSANITARY SPLASH



ISO 27065

ISO 27065 manages protective clothing for people in contact with or handling phytosanitary products (pesticides). 3 levels of protection have been defined:

- > Level 1 (C1): low potential risk / when there is no handling but potential indirect contact (re-entry),
- > Level 2 (C2): average to high risk / when handling pesticide products,
- > Level 3 (C3): high risk / when handling concentrated pesticide products or direct contact (spraying operations).

Most of the time leak-proof single-use PPE are requested to cover level 3. Protective textile solutions by TDV Industries cover levels C1 and C2.

PROTECTION AGAINST FOUL WEATHER CONDITIONS



EN 343

EN 343 is a European Standard for protective clothing that outlines a minimum level of protection against wet weather, with the whole garment construction taken into consideration, in addition to the fabric used. This standard also tests for strength and tear resistance, as durability is crucial for an item of waterproof clothing to retain its functionality and be able to withstand a hard day's work.

OTHER OPTIONAL FUNCTIONALITIES



Hydrofoil

Water repellency

A special combined finish grant both water and oil repellency granting then the above mentioned performances. For long lasting performance reimpregnation is necessary. Advised reimpregnation procedure is given to you on request.

Oil repellency

A special finish processed onto the fabric to grant oil repellency properties so that major greasy substances (except graphites) are not absorbed by the fabric. This is especially important when fabrics include polyester fibre which is oleophilic. For long lasting performance reproofing is recommended.

Oil & water repellency

A special combined finish granting both water and oil repellency characteristics. For long lasting performance reimpregnation is necessary. The recommended reimpregnation procedure is on request.



Duraclean: resistant to soil - easy to wash

Based on a new generation of eco-friendly chemistry, Duraclean is a Klopman finish which gives fabrics the ideal balance of repellency and washability.

When worn in dry conditions, Duraclean has hydrophobic features which make it resistant to oil and soil, thanks to a chemical component which reduces absorption. In wet conditions (during the washing process), Duraclean has soil-release properties, enabling the water and detergent molecules to extract soil from the fabric.

The fabric, and therefore the garment, stays cleaner when in use and releases soil during washing.

OUR SUSTAINABLE OPTIONS

Greenwear™ is our registered trademark. It summarises the concept of moving forward to a greener consciousness when wearing a garment. We offer the market different solutions even in combination.



Fabrics made with Recycled Polyester



Klopman proudly offers the market fabrics formed using **high-quality recycled yarns made from recycled materials** including **recycled plastic bottles**. This means making sustainable use of thousands of tonnes of waste plastic bottles which might otherwise end up in landfill.

Klopman fabrics made with recycled polyester ensure maximum transparency

and traceability of the whole supply chain.

This solution makes products more earth-friendly; in comparison with virgin polyester, recycled polyester reduces energy and water consumption and greenhouse gas emissions.



Better Cotton

Better Cotton is a not-for-profit organisation that exists to help cotton communities thrive and survive, while protecting the environment.



Organic Cotton

Buying organic cotton means purchasing natural fibres which haven't been subjected to the use of fertilisers, insecticides or pesticides. The benefits are significant: from enhancing biodiversity to taking care of the final wearer with a safer, more sustainable solution. We use traceable international standards for organic cotton sourcing.

TDV Industries: EGL/62719/869939/1



Fairtrade Cotton

Buying products made with Fairtrade-certified cotton guarantees the empowerment of cotton farmers through better prices, while the payment of the Fairtrade premium also contributes to protecting people and the environment through the prohibition of genetically modified seeds.

TDV Industries: FLO ID 3517

Klopman: FLO ID 19786



Ecolabel

The EU Ecolabel is the official European Union voluntary label for environmental excellence. The EU Ecolabel certifies products with a guaranteed and independently verified low environmental impact, which is why "labelled" services must meet high environmental standards throughout their entire life cycle: from raw material extraction through production and distribution to disposal.





Klopman International



www.klopman.com

TDV Industries



www.tdvindustries.com