



# GUARDSHEATH CABLES

THE LEAD-FREE & ENVIRONMENTAL FRIENDLY CABLE

**TKF** CONNECTIVITY SOLUTIONS

# TECHNOLOGICAL LEADERSHIP IN **CABLE AND CONNECTIVITY SOLUTIONS**

Since its establishment in 1930 TKF developed from a cable producer to a leading supplier of connectivity solutions located in the Netherlands. A broad range of cables, systems and services enables us to provide our customers worldwide with safe and reliable power and data connections.

Due to a focused commitment, TKF is distinguished by specialized application knowledge and solutions with a high degree of reliability, quality and service. Specialized technical know-how and flexibility lead to a high return on investment for our customers.

TKF is characterized by continuous investment in customer relations, quality and supplementary services, resulting in sustainable cable solutions and long-term and successful relationships.

It goes without saying that we offer our customized solutions with respect for people and environment. Being part of the technology company TKH Group NV, TKF has access to breakthrough solutions, concepts and technologies.

## **CSR-STRATEGY**

As a matter of strategic priority, sustainability is firmly embedded in our day-to-day operations, and CSR initiatives are increasingly being integrated into our organization. Our CSR policy provides a framework for our short- and medium-term plans without losing sight of company interests. CSR is fully incorporated into our business operations so that, when we implement our strategy and achieve our objectives, we consider our social responsibilities in relation to all relevant stakeholders. TKF is present in an increasing number of value chains as a purchaser, producer, supplier or business partner. In all of these roles, TKF tries to guarantee uniformity with regard to its CSR principles.



### **People:** The social aspect of entrepreneurship

- Ensuring a safe and healthy work environment;
- Providing opportunities for development, thereby retaining and engaging TKF employees.
- Being socially responsible towards the organisation as an employer.



### **Planet:** Attention for environment and climate

- TKF contributes to a better climate with an energy reduction program;
- More efficient commodity chains through reduction and separation of waste.
- Focus on circularity.



### **Profit:** Economic aspect of entrepreneurship

- Ingenuity as one of the pillars at TKF for further growth;
- Sustainability in the chain.



### **Positioning:** Maintaining a good reputation

- A balanced and sustainable product and customer portfolio;
- TKF provides (sponsor) contributions to society;
- Maintaining a good reputation.

MORE THAN **90 YEARS**  
OF EXPERIENCE



# RESPECT FOR SAFETY & ENVIRONMENT

Cables form an essential part of the infrastructure of petrochemical plants and refineries, where the environment can be rough. In the growing and more and more demanding petrochemical environment, the influence of aggressive chemicals such as hydrocarbons, solvents, acids, bases and moisture can cause breakdown of a cable, potentially threatening the safety and production of a plant.



## AN ECO-FRIENDLY ALTERNATIVE FOR LEAD



For many years, lead was a critical metal for the cable industry, with unique properties from perspective of blocking water and chemicals. But there are several drawbacks. Issues related to health threats and environmental damage, with effects on many other processes in the lead chain. Lead metal has therefore been identified by ECHA (European Chemical Agency) as a Substance of Very High Concern (SVHC) and added to the REACH candidate list for Authorization.

### **An environmental friendly alternative**

Through the years TKF aims to contribute to a sustainable society. This means that every business decision is not only made on the effect of profitability, but also on the consequences for the people in our organization and the impact on the environment and our reputation. TKF has taken its responsibility to stop the production of lead sheathed cables and developed an eco-friendly alternative with several extra advantages with regard to; environmental advantages, advantages on the recyclability of cables and installation advantages.

TKF developed GuardSheath®, which consist of three protective layers; Aluminium, HDPE, and Polyamide alloy. Each with its own protective function. GuardSheath® as an chemical barrier can be applied on the full range of industrial cables:

#### » **Power cables**

Ranging from low voltage power cables up to high voltage power cables

#### » **Instrumentation cables**

#### » **Optical fibre cables**



### TKF GuardSheath® cables

TKF GuardSheath® cables guarantee the functioning of the cables in harsh environments. In comparison with the conventional solution of lead sheathed cables, our GuardSheath® cable offers increased protection and adds several advantages.

- » Cables comply electrical and mechanical to Dutch standards HD604 and resp. HD620.
- » Earth screening copper wires integrated in armour is applied over the GuardSheath® layer.
- » For smaller cross sections an additional drain wire is added.



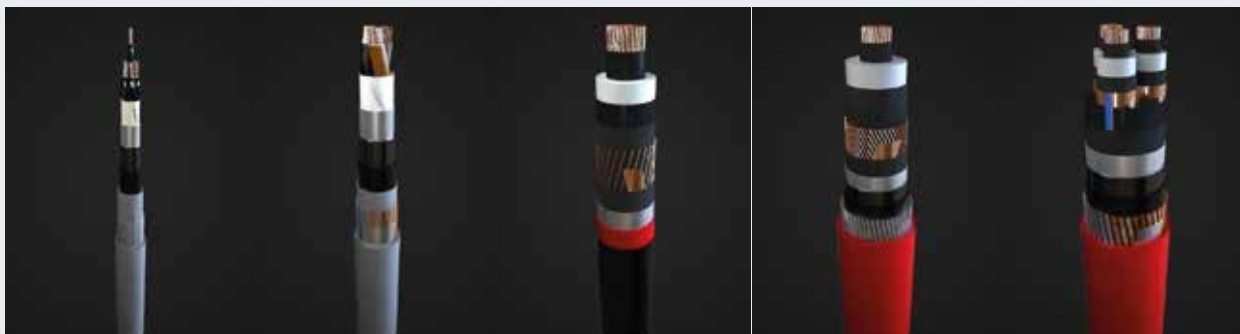
### BENEFITS & CHARACTERISTICS

- » Eco-friendly cable solution according to International standards offering optimal protection to chemicals.
- » Recyclability.
- » Weight reduction up to 40%, resulting in easier transportation, storage and installation.
- » No lead joints necessary, which results in lower installation cost and easier connection and longer cable runs.
- » Easier to strip and terminate.
- » Customized solutions meeting specific requirements of plant owners and contractors, TKF can support engineering on request.
- » Combination with Guardsheath (Nylon outer layer) also the friction between outer sheath and HDD will reduce. This results in superior construction to install over long lengths in HDD ducts.



# TKF GUARDSHEATH PORTFOLIO

GuardSheath® as a chemical barrier can be applied on the full range of industrial cables, ranging from low voltage power and instrumentation cables to optical fibre and high voltage cables.



For a list of the complete TKF GuardSheath® portfolio, please contact our sales department for more information.

## Industry

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TKF GuardsSheath® cables contain three different layers, each with its individual chemical resistance. Together, the GuardSheath® layer protects the cable core in the most harsh industrial environments:

Layer	Protective function	Examples
Inner Aluminium	Moisture barrier	» Water
High Density Polyethylene (HDPE)	Barrier for in-organic and polar chemicals	» Alcohols » Acids and bases » Solutions for inorganic salts
Polyamide alloy (PA)	Barrier to organic chemicals	» Aromatic solvents » Grease » Various oils » Aliphatic hydrocarbons





# TKF GUARDSHEET PORTFOLIO

Low voltage		* Ask for availability in Dca
TKF no.	Description	Type
188110	YMpaeKrvasdldwd Fca 18/30 kV	1 x 630 Alrm + as50
188111	YMpaeKrvasdldwd Fca 18/30 kV	1 x 800 Alrm + as50
188112	YMpaeKrvasdldwd Fca 18/30 kV	1 x 1000 Alrm + as50
188113	YMpaeKrvasdldwd Fca 18/30 kV	1 x 1200 Alrm + as50
188137	YMpaeKrvasdldwd Fca 18/30 kV	1 x 300 Curs + as50
188138	YMpaeKrvasdldwd Fca 18/30 kV	1 x 400 Curs + as50
188139	YMpaeKrvasdldwd Fca 18/30 kV	1 x 500 Curs + as50
188140	YMpaeKrvasdldwd Fca 18/30 kV	1 x 630 Curs + as50
188162	YMpaeKrvasdldwd Fca 8,7/15kV	1x 95 Curs +as 50
188163	YMpaeKrvasdldwd Fca 8,7/15kV	1x 120 Curs +as 50
188164	YMpaeKrvasdldwd Fca 8,7/15kV	1x 150 Curs +as 50
188165	YMpaeKrvasdldwd Fca 8,7/15kV	1x 185 Curs +as 50
188166	YMpaeKrvasdldwd Fca 8,7/15kV	1x 240 Curs +as 50
188167	YMpaeKrvasdldwd Fca 8,7/15kV	1x 300 Curs +as 50
188220	VG-YMpaeKrvasdwd Fca 6/10 kV	3 x 50 rs + as25
188221	VG-YMpaeKrvasdwd Fca 6/10 kV	3 x 70 rs + as25
188252	VG-YMpaeKrvasdwd Fca 6/10 kV	3 x 95 rs + as50
188253	VG-YMpaeKrvasdwd Fca 6/10 kV	3 x 120 rs + as50
188254	VG-YMpaeKrvasdwd Fca 6/10 kV	3 x 150 rs +as50
188255	VG-YMpaeKrvasdwd Fca 6/10 kV	3 x 185 rs + as50
188256	VG-YMpaeKrvasdwd Fca 6/10 kV	3 x 240 rs + as50
188280	VG-YMpaeKrvasdwd Fca 8,7/15 kV	3 x 50 rs + as25
188281	VG-YMpaeKrvasdwd Fca 8,7/15 kV	3 x 70 rs + as25
188322	VG-YMpaeKrvasdwd Fca 8,7/15 kV	3 x 95 rs + as50
188323	VG-YMpaeKrvasdwd Fca 8,7/15 kV	3 x 120 rs + as50
188324	VG-YMpaeKrvasdwd Fca 8,7/15 kV	3 x 150 rs +as50
188325	VG-YMpaeKrvasdwd Fca 8,7/15 kV	3 x 185 rs + as50
188326	VG-YMpaeKrvasdwd Fca 8,7/15 kV	3 x 240 rs + as50
188356	VG-YMpaeKrvasdwd Fca 18/30 kV	3 x 240 rs + as50
188355	VG-YMpaeKrvasdwd Fca 18/30 kV	3 x 185 rs + as50
188354	VG-YMpaeKrvasdwd Fca 18/30 kV	3 x 150 rs + as50
188353	VG-YMpaeKrvasdwd Fca 18/30 kV	3 x 120 rs + as50
188352	VG-YMpaeKrvasdwd Fca 18/30 kV	3 x 95 rs + as50
188384	VG-YMpaeKrvasdwd Fca 18/30 kV	3 x 150 Alrm + as50
188385	VG-YMpaeKrvasdwd Fca 18/30 kV	3 x 185 Alrm + as50
188386	VG-YMpaeKrvasdwd Fca 18/30 kV	3 x 240 Alrm + as50
188406	EG(Al)-YMpaeKrvasdldwd Fca 6/10kV	1 X 240 rs + as25
188438	EG(Al)-YMpaeKrvasdldwd Fca 6/10kV	1 X 400 Alrm + as25
188465	EG(Al)-YMpaeKrvasdldwd Fca 18/30kV	1 x 185 rs + as50



# TKF GUARDSHEET PORTFOLIO

Low voltage		* Ask for availability in Dca
TKF no.	Description	Type
188900	VO-YMvpaeKdwd Fca 0,6/1 kV	2 x 1,5 rm
188901	VO-YMvpaeKdwd Fca 0,6/1 kV	3 x 1,5 rm
188902	VO-YMvpaeKdwd Fca 0,6/1 kV	4 x 1,5 rm
188903	VO-YMvpaeKdwd Fca 0,6/1 kV	5 x 1,5 rm
188904	VO-YMvpaeKdwd Fca 0,6/1 kV	6 x 1,5 rm
188905	VO-YMvpaeKdwd Fca 0,6/1 kV	7 x 1,5 rm
188906	VO-YMvpaeKdwd Fca 0,6/1 kV	8 x 1,5 rm
188907	VO-YMvpaeKdwd Fca 0,6/1 kV	12 x 1,5 rm
188908	VO-YMvpaeKdwd Fca 0,6/1 kV	14 x 1,5 rm
188909	VO-YMvpaeKdwd Fca 0,6/1 kV	21 x 1,5 rm
188910	VO-YMvpaeKdwd Fca 0,6/1 kV	24 x 1,5 rm
188911	VO-YMvpaeKdwd Fca 0,6/1 kV	37 x 1,5 rm
188912	VO-YMvpaeKdwd Fca 0,6/1 kV	2 x 2,5 rm
188913	VO-YMvpaeKdwd Fca 0,6/1 kV	3 x 2,5 rm
188914	VO-YMvpaeKdwd Fca 0,6/1 kV	4 x 2,5 rm
188915	VO-YMvpaeKdwd Fca 0,6/1 kV	5 x 2,5 rm
188916	VO-YMvpaeKdwd Fca 0,6/1 kV	6 x 2,5 rm
188917	VO-YMvpaeKdwd Fca 0,6/1 kV	7 x 2,5 rm
188918	VO-YMvpaeKdwd Fca 0,6/1 kV	8 x 2,5 rm
188919	VO-YMvpaeKdwd Fca 0,6/1 kV	10 x 2,5 rm
188920	VO-YMvpaeKdwd Fca 0,6/1 kV	12 x 2,5 rm
188921	VO-YMvpaeKdwd Fca 0,6/1 kV	14 x 2,5 rm
188922	VO-YMvpaeKdwd Fca 0,6/1 kV	16 x 2,5 rm
188957	VO-YMvpaeKdwd Fca 0,6/1 kV	19 x 2,5 rm
188923	VO-YMvpaeKdwd Fca 0,6/1 kV	21 x 2,5 rm
188924	VO-YMvpaeKdwd Fca 0,6/1 kV	24 x 2,5 rm
188925	VO-YMvpaeKdwd Fca 0,6/1 kV	2 x 4 rm
188926	VO-YMvpaeKdwd Fca 0,6/1 kV	2 x 4 rm
188927	VO-YMvpaeKdwd Fca 0,6/1 kV	3 x 4 rm
188958	VO-YMvpaeKdwd Fca 0,6/1 kV	12 x 4 rm
188928	VO-YMvpaeKdwd Fca 0,6/1 kV	2 x 6 rm
188929	VO-YMvpaeKdwd Fca 0,6/1 kV	3 x 6 rm
188930	VO-YMvpaeKdwd Fca 0,6/1 kV	4 x 6 rm
188931	VG-YMvpaeKdwd Fca 0,6/1 kV	2 x 10 rs
188932	VG-YMvpaeKdwd Fca 0,6/1 kV	3 x 10 rs
188933	VG-YMvpaeKdwd Fca 0,6/1 kV	4 x 10 rs
188934	VG-YMvpaeKdwd Fca 0,6/1 kV	2 x 16 rs
188935	VG-YMvpaeKdwd Fca 0,6/1 kV	3 x 16 rs
188936	VG-YMvpaeKdwd Fca 0,6/1 kV	4 x 16 rs



# TKF GUARDSHEET PORTFOLIO

Low voltage		* Ask for availability in Dca
TKF no.	Description	Type
188959	VG-YMvpaeKdwd Fca 0,6/1 kV	2 x 25 rs
188937	VG-YMvpaeKdwd Fca 0,6/1 kV	3 x 25 rs
188938	VG-YMvpaeKdwd Fca 0,6/1 kV	4 x 25 rs
188939	VG-YMvpaeKdwd Fca 0,6/1 kV	3 x 35 rss
188940	VG-YMvpaeKdwd Fca 0,6/1 kV	4 x 35 rss
188941	VG-YMvpaeKdwd Fca 0,6/1 kV	3 x 50 svss
188942	VG-YMvpaeKdwd Fca 0,6/1 kV	4 x 50 svss
188943	VG-YMvpaeKdwd Fca 0,6/1 kV	3 x 70 svss
188944	VG-YMvpaeKdwd Fca 0,6/1 kV	4 x 70 svss
188945	VG-YMvpaeKdwd Fca 0,6/1 kV	3 x 95 svss
188946	VG-YMvpaeKdwd Fca 0,6/1 kV	4 x 95 svss
188947	VG-YMvpaeKdwd Fca 0,6/1 kV	3 x 120 svss
188948	VG-YMvpaeKdwd Fca 0,6/1 kV	4 x 120 svss
188949	VG-YMvpaeKdwd Fca 0,6/1 kV	3 x 150 svss
188950	VG-YMvpaeKdwd Fca 0,6/1 kV	4 x 150 svss
188951	VG-YMvpaeKdwd Fca 0,6/1 kV	3 x 185 svss
188952	VG-YMvpaeKdwd Fca 0,6/1 kV	4 x 185 svss
188953	VG-YMvpaeKdwd Fca 0,6/1 kV	3 x 240 svss
188954	VG-YMvpaeKdwd Fca 0,6/1 kV	4 x 240 svss
188955	VG-YMvpaeKdwd Fca 0,6/1 kV	3 x 300 svss
188956	VG-YMvpaeKdwd Fca 0,6/1 kV	4 x 300 svss

Instrumentation		
TKF no.	Description	Type
172650	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	1 x 2 x 1,0 mm <sup>2</sup> (cl.1) Black
172651	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	2 x 2 x 1,0 mm <sup>2</sup> (cl.1) Black
172652	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	5 x 2 x 0,5 mm <sup>2</sup> (cl.1) Black
172653	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	10 x 2 x 0,5 mm <sup>2</sup> (cl.1) Black
172654	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	20 x 2 x 0,5 mm <sup>2</sup> (cl.1) Black
172655	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	50 x 2 x 0,5 mm <sup>2</sup> (cl.1) Black
172656	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	1 x 3 x 1,0 mm <sup>2</sup> (cl.1) Black
172657	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	2 x 3 x 1,0 mm <sup>2</sup> (cl.1) Black
172658	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	5 x 3 x 0,5 mm <sup>2</sup> (cl.1) Black
172659	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	10 x 3 x 0,5 mm <sup>2</sup> (cl.1) Black
172660	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	20 x 3 x 0,5 mm <sup>2</sup> (cl.1) Black
172661	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	50 x 3 x 0,5 mm <sup>2</sup> (cl.1) Black





# TKF GUARDSHEET PORTFOLIO

Instrumentation		
TKF no.	Description	Type
172662	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	1 x 2 x 2,5 mm <sup>2</sup> Black
172663	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	2 x 2 x 2,5 mm <sup>2</sup> Black
172664	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	5 x 2 x 2,5 mm <sup>2</sup> Black
172665	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	10 x 2 x 2,5 mm <sup>2</sup> Black
172666	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	20 x 2 x 2,5 mm <sup>2</sup> Black
172667	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	1 x 3 x 2,5 mm <sup>2</sup> Black
172668	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	2 x 3 x 2,5 mm <sup>2</sup> Black
172669	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	5 x 3 x 2,5 mm <sup>2</sup> Black
172670	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	10 x 3 x 2,5 mm <sup>2</sup> Black
172671	XLPE-AL/HDPE/PA-PVC-SWA-PVC Dca	20 x 3 x 2,5 mm <sup>2</sup> Black

Instrumentation		
TKF no.	Description	Type
172675	XLPE-MS-AL/HDPE/PA-PVC-SWA-PVC Dca	2 x 2 x 1,0 mm <sup>2</sup> Black
172676	XLPE-MS-AL/HDPE/PA-PVC-SWA-PVC Dca	5 x 2 x 0,5 mm <sup>2</sup> Black
172677	XLPE-MS-AL/HDPE/PA-PVC-SWA-PVC Dca	10 x 2 x 0,5 mm <sup>2</sup> Black
172678	XLPE-MS-AL/HDPE/PA-PVC-SWA-PVC Dca	20 x 2 x 0,5 mm <sup>2</sup> Black
172679	XLPE-MS-AL/HDPE/PA-PVC-SWA-PVC Dca	50 x 2 x 0,5 mm <sup>2</sup> Black
172680	XLPE-MS-AL/HDPE/PA-PVC-SWA-PVC Dca	5 x 3 x 0,5 mm <sup>2</sup> Black
172681	XLPE-MS-AL/HDPE/PA-PVC-SWA-PVC Dca	10 x 3 x 0,5 mm <sup>2</sup> Black
172682	XLPE-MS-AL/HDPE/PA-PVC-SWA-PVC Dca	20 x 3 x 0,5 mm <sup>2</sup> Black
172683	XLPE-MS-AL/HDPE/PA-PVC-SWA-PVC Dca	50 x 3 x 0,5 mm <sup>2</sup> Black
172684	XLPE-MS-AL/HDPE/PA-PVC-SWA-PVC Dca	2 x 3 x 1,0 mm <sup>2</sup> Black
172685	XLPE-MS-AL/HDPE/PA-PVC-SWA-PVC Dca	2 x 2 x 2,5 mm <sup>2</sup> Black
172686	XLPE-MS-AL/HDPE/PA-PVC-SWA-PVC Dca	5 x 2 x 2,5 mm <sup>2</sup> Black
172687	XLPE-MS-AL/HDPE/PA-PVC-SWA-PVC Dca	10 x 2 x 2,5 mm <sup>2</sup> Black
172688	XLPE-MS-AL/HDPE/PA-PVC-SWA-PVC Dca	20 x 2 x 2,5 mm <sup>2</sup> Black
172689	XLPE-MS-AL/HDPE/PA-PVC-SWA-PVC Dca	2 x 3 x 2,5 mm <sup>2</sup> Black
172690	XLPE-MS-AL/HDPE/PA-PVC-SWA-PVC Dca	5 x 3 x 2,5 mm <sup>2</sup> Black
172691	XLPE-MS-AL/HDPE/PA-PVC-SWA-PVC Dca	10 x 3 x 2,5 mm <sup>2</sup> Black
172692	XLPE-MS-AL/HDPE/PA-PVC-SWA-PVC Dca	20 x 3 x 2,5 mm <sup>2</sup> Black



## TKF CONNECTIVITY SOLUTIONS

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