



SPECIAL CABLES FOR
PHOTOVOLTAIC
TECNIKABEL . IT

TECNIKABEL is a leading company in Europe in the special electrical cables sector. Established in 1978, it immediately focused its business activity on research and innovation.

Wherever the future is designed **TECNIKABEL** is in the front line:

- ▶ Collaborating with leading companies in various sectors
- ▶ Fully satisfying the needs of its customers
- ▶ Focusing on continual improvement in its quality and reliability targets.

In its production plants **TECNIKABEL** realises cables intended for the widest variety of applications, from automation to railways, from telecommunications to industrial electronics, from audio video to defence, from off-shore to solar energy, from shipping to the electro-medical sector, with maximum priority given to technical support from the very start of the cable design phases.

- ▶ A rigorous analysis of applications
- ▶ Evaluation of the most suitable materials for any environment
- ▶ Optimisation of product costs

make it possible to suggest and realise original solutions that fully satisfy the specific requests of our customers.

Each **TECNIKABEL** cable contains everything needed to ensure our products are reliable with every type of voltage.

Our high quality levels are guaranteed by a modern production process controlled at every stage. Our staff's high degree of know-how and our company quality system have been recognised and certified in compliance with **UNI EN ISO 9001:2000** standards since 1994, under the control of national (**CISQ** and **IMQ**) and international (**IQNET**) certification bodies.



PRODUCT LINES



TECNIKABEL

is committed to constant product innovation to obtain a competitive advantage with ongoing dedication to research and development.



A TECHNICAL HEART BEATS WITHIN OUR COMPANY

PRODUCTION

Updated production systems, rigorous operational procedures and expert operators have made it possible for us to carry out our production both efficiently and flexibly. In 30 years of activity we have built more than 22,000 different types of cables.

FINAL INSPECTIONS

At the end of production processes each cable is examined to check its electrical specifications and complete compliance with customer specifications.

LABORATORY TESTS

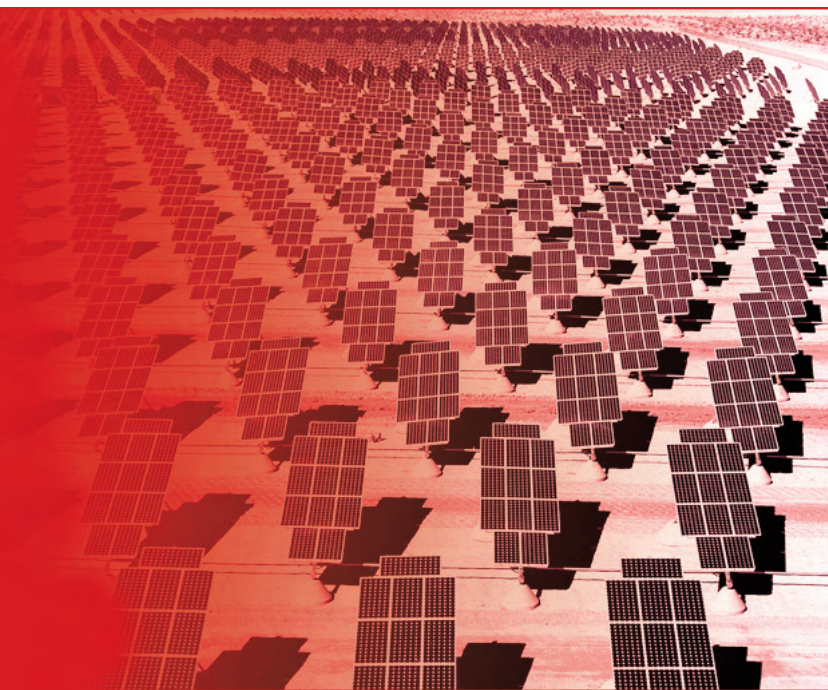
We subject our cables to the most rigorous tests, simulating critical utilisation conditions. In addition to the classic tests required by current regulations, we have also built special machinery for various types of mechanical and electrical tests.

MATERIALS RESEARCH AND DEVELOPMENT

Our thirty year experience has committed us to continual research in new materials in order to optimise performances, costs and achieve the standards required by our customers.

TECNIKABEL has always devoted special attention to quality and customer service from the very first phases of any sale.

Leading certification organisations like **UL** and **CSA** have, over the years, recognised the high quality and performance of our cables, issuing us with **more than 600 homologations**.



TK SUN cables satisfy requirements in terms of the thermal life as set out in CEI 20-91 STANDARD which represents the reference point in Italy for photovoltaic cables.

In addition they have extraordinary specifications when it comes to resistance to ultraviolet rays (UV), atmospheric agents, ozone, hydrolysis, oils, ammonia, bio-gas and chemical agents in general.

Should a fire break out they do not propagate flames and generate only low levels of fumes, toxic gases and halogens (LSOH).

Our **TK SUN** cables are recommended for interconnecting various elements in photovoltaic systems. They are suitable for either exterior or interior fixed installation, without needing to be protected inside pipes or set flush or in closed systems. Cables for special applications are available on request.

TK SUN cables, designed for this specific purpose, are the right choice and guarantee:

- ▶ **HIGH SAFETY LEVELS**
- ▶ **LONG TECHNICAL LIFE**
(more than 25 years)
- ▶ **TOTAL TECNİKABEL QUALITY**



ARMoured CABLES

All cables can be supplied, on request, with stainless steel plait protection, resistant to corrosion, unalterable over time and the only 100% guaranteed protection against rodents.

CONTROL CABLES

To connect PV equipment remote controls, dedicated cables are available with the transmission specifications of all the main protocols.

CABLES OFFERING PROTECTION AGAINST LIGHTNING

Where there are installations in areas that are particularly subject to atmospheric conditions that generate lightning, we recommend using protected cables that can be connected to an appropriate protection system.

To this end all our cables can be provided, on request, with an optimised shield that is resistant to electromagnetic interferences (EMC 89/336) of any kind, including those due to atmospheric conditions.

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TK-SUN® **HQ** FG21M21

Structure of leads

Tin-plated copper Class 5 in compliance with CEI 20-29 - IEC 60228
VDE 0295 - NFC 32012

Insulation	Halogens free high flexibility module reticulate polymer
External sheath	Halogens free high flexibility module reticulate polymer resistant to inclement weather and UV rays.
Operating temperature	-40 °C ÷ + 125 °C
Operating voltage	1800 V d.c. 1200 V a.c.
Insulation resistance	> 10 MΩx km
Guaranteed life without maintenance	> 25 years
Mark	TECNIKABEL (TO) - ITALY - TK SUN HQ - 1x(section)mm ² - FG21M21 - IEMMEQU - CE - (Year of manufacture) <i>progressive metric marking on request</i>
Sheath Colour	Available in colours: BLACK, BLUE or RED

Code P/N Col.Black	Nominal section Mm	Nominal external diameter Mm	Copper content kg/Km	Nominal cable weight kg/km	Electrical resistance max 20°C Ω/Km	Admissible current capacity at 60°C
245B125N	1.5	4.6	13	35	13.7	30
255B125N	2.5	5.1	21	47	8.21	41
265B125N	4	5.6	34	64	5.09	55
270B125N	6	6.4	49	87	3.39	70
280B125N	10	7.4	89	136	1.95	98
185B125N	16	9	141	201	1.24	132
290B125N	25	10.6	222	308	0.795	176
293B125N	35	12.2	312	415	0.565	218
295B125N	50	14.6	446	578	0.393	276
297B125N	70	16.4	651	813	0.277	347
298B125N	95	17.6	836	1020	0.21	416
299B125N	120	19.8	1070	1288	0.164	488

on request the following sections can also be realised - 150 - 185 - 240 - 300 mm² without IMQ approval.



technical specifications




TK SUN

Electrical cables with elastomeric sheath and insulation, without halogens, non flame propagating, with nominal voltage not greater than 1000 V in alternating current and 1500 V in direct current, for applications in photovoltaic plants.

REFERENCE STANDARDS

CEI 20-91: 2010	Products in compliance with essential requirements of directive B.T. 2006/95/CE
CEI 15-49 <i>EN 606216-1</i>	Electrical insulating materials - Properties of thermal endurance - Part 1 : Ageing procedures and evaluation of test results
CEI 15-50 <i>EN 60216-2</i>	Electrical insulating materials - Thermal endurance properties - Part 2 : Determination of thermal endurance properties of electrical insulating materials - Choice of test criteria
CEI 20-11 <i>EN 50363</i>	Insulation, sheath and coating materials for low voltage energy cables
CEI 20-13	Cables with extruded insulation in rubber for nominal voltages from 1 to 30 kV
CEI 20-17/4 <i>EN 50305</i>	Rail applications. Test methods.
CEI 20-29 <i>EN 60228</i>	Leads for insulated cables
CEI 20-34 <i>EN 60811</i>	Test methods for insulation and sheaths of rigid and flexible electric cables
CEI 20-35/1-2 <i>EN 60332-1-2</i>	Test for vertical flame propagation in an individual insulated cable or lead
CEI 20-37/2-1 <i>EN 50627-2-1</i>	Determination of the quantity of gaseous halogen acids emitted during combustion of cable polymeric materials
CEI 20-37/2-2 <i>EN 50267-2-2</i>	Determination of level of acidity (corrosiveness) of gases emitted during combustion of cable polymeric materials
CEI 20-37/3-1 <i>CEI EN 61034-2</i>	Measure the density of smoke emitted by the cables that burn in defined conditions
CEI 20-37/4-0	Determination of toxicity index of gases emitted
CEI 20-50 <i>HD 605</i>	Distribution cables - Supplementary test methods
CEI 20-80 <i>EN 50395</i>	Electrical test methods for low voltage cables
CEI 20-84 <i>EN 50396</i>	Non electrical test methods for low voltage cables
CEI 64-8/7	Electrical systems using nominal voltage not greater than 1000 V in AC and 1500 V in DC - Parte 7: Environments and specific applications



 <p>INSIEME PER LA QUALITÀ E LA SICUREZZA</p>	<p>IMQ S.p.A. I-20138 Milano - via Quintiliano, 43 tel. 0250731(r.a.) - fax 0250991500 e-mail: info@imq.it - www.imq.it</p>	<p>Rea Milano 1595884 Registro Imprese MI 12898410159 C.F./P.I. 12898410159 Capitale Sociale € 4.000.000</p>	<p>CA01.00530 SN.K000MK</p>
<p>Allegato - Certificato di approvazione Annex - Approval certificate</p>		<p>Emesso il / Issued on 2010-05-11 Data di aggiornamento / Updated on 2010-08-31 Sostituisce / Replaces 2010-05-11</p>	
<p>Prodotto Product</p> <p>Cavi isolati con gomma Rubber insulated cables</p>			
<p>Concessionario Licence Holder</p> <p>TECNIKABEL SRL VIA BRANDIZZO 243 10088 VOLPIANO TO</p>		<p>Marchio Mark</p> 	
<p>Costruito a Manufactured at</p> <p>97001693 CLTEKA.COILCTEKA+1 10088 VOLPIANO TO Italy</p> <p><small>Copia del presente certificato deve essere conservata presso i luoghi di produzione sopra elencati. Copy of this certificate must be available at the manufacturing places listed above</small></p>			
<p>Norme</p> <p>CEI 20-91:2010 Prodotti conformi ai requisiti essenziali della Direttiva B.T. 2006/95/CE</p>		<p>Standards</p> <p>CEI 20-91:2010 Products meeting the essential requirements of L.V.D. 2006/95/EC</p>	
<p>Rapporti Test Reports</p> <p>01AK00018</p>			
<p>Caratteristiche tecniche Technical characteristics</p> <p>Tipo di cavo / Type of cable Cavi con isolamento e guaina elastomerici senza alogeni, non propaganti la fiamma, per applicazioni in impianti fotovoltaici / Flame retardant cable, with crosslinked insulation and sheathing, halogen free, for photovoltaic applications</p> <p>Sigla di designazione / Type designation FG21M21 - (1500 V cc)</p> <p>Tensione nominale / Rated voltage 0,6/1kV c.a./a.c. - 1,5 kV c.c./d.c.</p>			
<p>Articoli (con dettagli) Articles (with details)</p> <p>AR.K00459</p> <p>- filo distintivo / - identification thread ma-bi-ma-bi-ro-bi (10-90-10-90-20-90)</p> <p>- stampigliatura / - printing TECNIKABEL</p> <p>Serie/Modello / Series/Model TK SUN HQ</p>			
<p>Diritti di concessione Annual Fees</p> <p>SN.K000MK BTK.010100.DA19 Diritti modelli IMQ - 0101 - Cavi isolati con gomma IMQ models - 0101 - Rubber insulated cables 0</p>			
<p> IMQ S.p.A.</p>			

CHEMICAL PARAMETERS

Absence of halogens: CEI 20-37/2-1 and 2-2-EN 50267
Resistance to oil: 24h at 100°C
Resistance to acids and alkalis: 7 days at environmental temperature as in EN-50264-1
Resistance to inclement weather: - UV - Xenon test UL 1581
- Ozone HD 22-2 test B and VDE 0282-2
- Water absorption EN 60811-1-3

FLAME PROPAGATION

EN 60332-1-2
Fumes opacity: transmittance greater than 70%
Corrosiveness: EN 50264-1
Toxicity: ITC less than 3
Rohs Compliant

LAYING CONDITIONS

Minimum installation and handling temperature: -40°C
Maximum traction force during laying: 50 N x mm
Maximum short circuit temperature: +250°C

ELECTRICAL PARAMETERS

Nominal voltage Uo/U AC: 0.6/1 kV
Nominal voltage Uo/U DC: 0.9/1 Kv
Admissible current: DIN VDE 0298 part 4

THERMAL PARAMETERS

Environment temperature: -40°C/+90°C
Maximum lead temperature: + 120°C
Maximum short circuit temperature: +250 °C

ADMISSIBLE BENDING RADII

Bending near connections:
Diameter 8 mm : 2 D (Diameter)
8 mm < D < 12 mm: 3 D
12 mm < D < 20 mm: 4 D
D > 20 mm: 5 D



AGENT/DEALER:

TecniKabel
SPECIAL ELECTRICAL CABLES

TECNIKABEL srl

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