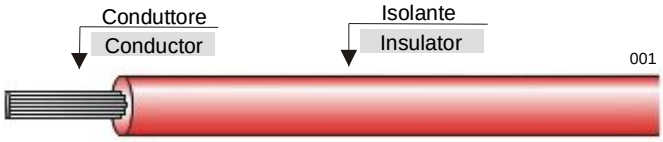
HIGH TEMPERATURE www.blf.it - blf@blf.it

Specifica Tecnica
Technical Sheet

C001

CAVO UNIPOLARE CON CONDUTTORE FLESSIBILE ISOLATO IN GOMMA SILICONE
SINGLE CORE CABLE WITH FLEXIBLE CONDUCTOR SILICONE RUBBER INSULATED

FG4/2



DATI TECNICI			TECHNICAL DATA		
- Tensione Nominale - Working Voltage	: :	**300/500V**	- Temperatura di Esercizio - Temperature Range	: :	**180°C**
- Tensione di Prova in H_20 - Test Voltage in H_20	: :	**2000V**			

REALIZZAZIONE			CONSTRUCTION		
- Conduttore - proprietà e costruzione	:	Fili elementari in Rame Rosso, Stagnato e Nichelato trefolati, classe 5 Proprietà vedi **T009** - Costruzione secondo **EN**(IEC-VDE)**60228**			
- Conductor - property and construction	:	Twisted strands of flexible Bare Copper, Tin or Nickel coated Copper wires class 5 Property see **T009** - Construction in conformity to **EN**(IEC-VDE)**60228**			
- Colori - Colours	: :	Vedi tabella **T005** See Table **T005**	- Confezionamento - Packing	: :	Vedi tabelle **T002-T003** See Tables **T002-T003**
- Tolleranza sul ∅ esterno - Tolerance on external ∅	: :	±0,10mm dalla sez.0,35mm^2 alla 2,50mm^2; ±0,20mm dalla sez.4,00mm^2 alla sez.25,0mm^2 ±0,10mm from sec. 0,35mm^2 to 2,50mm^2; ±0,20mm from sec. 4,00mm^2 to sec.25,0mm^2			

Caratteristiche Dimensionali / Dimensional Characteristics					Caratteristiche Elettriche conduttori in rame rosso. Vedi tabella T009 / Electrical Characteristics conductor bare copper. See table T009		
CONDUTTORE / CONDUCTOR			ISOLANTE / INSULATION				
Sezione Section (mm^2)	Formazione Composition [n° x ∅(mm)]	Diametro Diameter (mm)	Spess. Isolante Insulat. Thickn. (mm)	∅ Esterno External ∅ (mm)	Resistenza max@20°C Resistance max@20°C (ohm/Km)	(I) MAX 20°C ΔT +50° Ampere	Peso Weight (kg/km)
0,25	8 x 0,20	0,70	0,45	1,60	75,50	5,00	5,40
0,35	11 x 0,20	0,80	0,50	1,80	54,70	8,00	6,50
0,50	16 x 0,20	0,90	0,60	2,10	39,00	12,00	9,10
0,75	24 x 0,20	1,20	0,60	2,40	26,00	15,00	12,60
1,00	32 x 0,20	1,30	0,60	2,50	19,50	17,00	15,10
1,50	30 x 0,25	1,60	0,60	2,80	13,30	23,00	20,40
2,00	40 x 0,25	1,80	0,60	3,00	9,75	28,00	25,80
2,50	50 x 0,25	2,00	0,70	3,40	7,98	33,00	32,60
3,00	60 x 0,25	2,20	0,70	3,60	6,50	37,00	36,00
4,00	56 x 0,30	2,70	0,75	4,20	4,95	41,00	50,00
6,00	84 x 0,30	3,30	0,85	5,00	3,30	50,00	74,50
10,00	80 x 0,40	4,40	1,05	6,50	1,91	80,00	125,00
16,00	126 x 0,40	5,50	1,25	8,00	1,21	100,00	196,00
25,00	196 x 0,40	6,80	1,50	9,80	0,78	145,00	301,00

CARATTERISTICHE E VALORI SONO INDICATIVI E POSSONO VARIARE SENZA PREAVVISO
CHARACTERISTICS AND VALUES ARE INDICATIVE AND THEY CAN BE MODIFIED WITHOUT NOTICE

RACCOMANDAZIONI PER L'USO SUL RETRO
RECOMMENDATIONS FOR USE BEHIND

DATA EMISSIONE	07/06/94	INDICE DI MODIFICA	**16**	DATA MODIFICA	**28/11/2012**
Redatto da **SETP** (firma) Issue by **SETP** (signature)	Luca Mercalli	Verificato da **SEP** (firma) Verified by **SEP** (signature)		Approvato da **DIG** (firma) Approved by **DIG** (signature)	

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PARTICULARITIES-PERFORMANCES AND PRECAUTIONS-RECCOMENDATIONS FOR USE-CE MARKING-GUARANTEES- EXAMINATONS AND INSPECTIONS

101 - PARTICULARITIES

The product on this technical sheet, except for different instructions determined during contractual decisions, is insulated with standard filled silicone rubber compound having the following requirements:

Density	g/cm³	1,60 ± 0,02	Dielectric Strength	kV/mm	15	Tear strength min.	N/mm. 10
Elongation	min. Original condition	120%	After Ageing	10 days 200°C		65%	
Tensile strength	N/mm² min. Original condition	5	After Ageing	10 days 200°C	N/mm²	3,5	

Tests and inspections are made with reference to the Norms CEI-EN

000 - GENERALITIES

PERFORMANCES (Silicon rubber insulation)

The silicone rubber insulated cables, further to giving high performances in environments with high temperatures, have got also other good qualities : halogen free, excellent UV, Ozone, Oxygen, Artificial Light, Atmospheric Agents etc. resistance, as well as good behaviour at low temperatures; Until -50°C the silicone rubber maintains its characteristics of elasticity (ASTM 2137A). If this temperature is overcame rubber looses gradually its elastic characteristics. The breaking temperature is -73°C. (ASTM D2137A).
The performances of this cable, the norms applied during designing and construction, the construction characteristics are those indicated on the front side of this document.
On it are also indicated possible Certifications (Quality Marks) and the references of the Certificate, that can be found also on the website: www.blf.it.

PRECAUTIONS AND RECCOMENDATIONS USE

In order to grant obtaining performances it is necessary that the cable is dimensioned in the correct way taking care of checking that the charge applied complies with the section of the conductor, without ignoring the increase of resistivity of the conductor itself in case of a temperature that is higher than the temperature of the environment. A help for the correct dimensioning of the cable is given in Table T009 made by BLF and available on the website: www.blf.it
It is also necessary to use all precautions against risks of mechanical damages of the insulator during handling, wiring and installation (avoid torsions, abrasions, rubbings, contacts with sharp surfaces).These precautions have to be applied in any case, but in particular if the insulator is made up of silicone rubber compound that, for its own nature is soft and so can be easily damaged. Choosing a silicone rubber insulated cable, protected with a textile impregnated braid, can be a valid help in preventing risks of damaging the insulator and so it can contribute to the security in the long term of the equipment in which the cable is used.
It is a good norm to respect the minimum bend radii and not to submit the cable to traction stresses that can damage the product. Values not to be exceeded are:
Minimum bend radius (CEI 20-40) : cable with diameter until 12 mm. - 4 times the cable diameter if in static installation – 5 times the cable diameter if in non static installation
Traction stress (CEI 20-40) : 15N for each sq. mm. of section
The cable must not be installed directly buried outdoors and beneath plaster coats, as also cables made for static installation must not be used on moving equipments.
This may cause breaking of the conductors and following outgoing of the same from the insulator with the risk of short circuit.
In case of use on moving equipments it is necessary to choose products right for the purpose, determining them in advance with our Technical Department.
Warning: It must be taken into consideration that high temperatures (higher than 180°C) can cause the oxidation of the conductors if in bare or tinned copper. In some case the silicone rubber insulator and the conductor may stick together without compromising the insulation characteristics of the cable. Using conductors in Nickel Coated copper, there will be no oxidation of the conductor and sticking to the insulator. Still at high temperatures in the version coated with textile impregnated braid the colour may change.

HARMFUL SUBSTANCES FOR THE ELECTRIC INSULATOR

The contact between the electric insulator and substances that can deteriorate its properties must be avoided. In particular, for silicone rubber the following substances are indicated as harmful from the producers of rubber: hydrochloric, hydrofluoric, formic, nitric, sulphuric, stearic acids; petrol, oil, diesel oil, butanol, perchlorethylene.

EMISSIONS - CLASSIFICATION OF THE PRODUCT

Tests, that are carried out in certified laboratories, allow us to state, for our silicone insulated cables, with or without fiberglass braid or polyester protection, the following classifications:

- ABSENCE OF HALOGENS (LSOH) Test according to the Norm CEI-EN 50267-2-1 (CEI 20-37/2-1)
- LOW DEGREE OF ACIDITY Test according to the Norm CEI-EN 50267-2-2 (CEI 20-37/2-2)
- LOW EMISSION OF TOXIC SMOKES AND GASES Test according to the Norm CEI-EN 61034-1 - CEI-EN 61034-2

Even if in very small quantity (lower than 0,1% found in the test), some remains of vulcanization, namely of the catalyser "Dichlorine Benzoil Peroxide containing 2,4 Dichlorbenzoic Acid", that is used for the vulcanization process, remain present. They are released during the first heating of the cable or at room temperature in a longer lapse of time, releasing in some cases a white patina on the surface. Should the total absence of emissions be required, an appropriate post-vulcanization cycle must be considered.
Our Technical Department can give, on demand, detailed information.

HANDLING OF THE PRODUCT

The possible presence of remains of the vulcanization can be cause of cutaneous irritation if in contact with the product. You are advised to handle with adequate protections, if necessary in that situation.

HARMFUL SUBSTANCES ABSENT IN THE CABLE and DECLARATION according to Directives 2000/53/EC - 2011/65/UE

BLF cables do not contain any toxic or harmful substances introduced on purpose. The following substances are absent, in the limits of sensitivity of the traditional analytical technique: Naphthylamine and its Salts (CAS91.59.9); Aminodiphenyl and its Salts (CAS92.67.1); Benzidine and its Salts (CAS92.87.5); Nitrodiphenyl (CAS92.93.3); * PBB (Polybrominated Biphenyls); * PBDE (Polybrominated Diphenyl Ethers); * Deca BDE; * Lead; * Mercury; * Chrome VI; ** Cadmium; PFOS and other substances dangerous for health.
(* Maximum percentage allowed by weight for homogeneous material 0,1% =1000 ppm - ** Maximum percentage allowed by weight for homogeneous material 0,01% = 100 ppm)
In the light of our current knowledge and on the basis of our documentation we can state that our products basically comply with the requirements of the following norms:
67/548/EEC - Regarding packaging and labelling of dangerous substances 76/769/EEC - Regarding Restrictions on introductions and use of dangerous substances.
2000/53/EC - ELV Regarding End of life vehicles 1907/2006-REACH - Registration, Evaluation and Authorisation of Chemicals
2011/65/UE - RoHS Regarding Restrictions of the use of certain hazardous substances in electrical and electronic equipment
2002/96/EC - WEEE Handling of Waste of Electrical and Electronic Equipment
BLF's position towards the REACH Regulation is: *DOWNSTREAM USER*. In this position BLF must not effect the Registration of Substances or Preparations.
BLF assures that the products supplied do not contain Dangerous Substances defined "SVHC" in the "Candidate List" or in the "Authorisation List" of the REACH Regulation, and assures also recurrent monitoring of possible changes to the norm 1907/2006 REACH and to the "candidate list".
For the electric cables no Security Sheet is made. The regulations in force do not provide for it. (Decree 7th September 2002 in implementation of the Directive 2001/58/EC regarding the information modalities about hazardous substances and preparations put on the market)..

DECLARATION OF CONFORMITY AND CE MARKING

Every supply is given with "Declaration of Conformity" to this Technical Sheet. If the current laws in Italy provide for it, on the identification labels of the products the "CE" logo appears.
In case of homologated products also the logo of the homologation authority and the number of the certificate are indicated.
CE marking is not to be applied for cables with Working Voltage lower than 50V and higher than 1000V AC or lower than 75V and higher than 1500V DC.
CE marking is omitted on special cables made on demand, where the dimensioning of the product is defined by the Customer and without information about electric performances.
In these cases the customer is responsible for the employment of the product in safety conditions.
In case the product is exported out of the European Community area, CE marking is not to be considered applicable in the area of destination of the goods (L. Dec. 626/96 art.1 par. 1 - Directive n. 2006/95/CE).

GUARANTEES - EXAMINATIONS AND INSPECTIONS

During designing, the National or International Norms quoted on the front side of this document are applied. If believed as appropriate, the products are homologated by External Authorities for Product Certification (IMQ - IMQ HAR- VDE- UL – CSA etc.) which grant the compliance with the requirements in the long term through inspection visits and laboratory tests.
In case of products made without specific regulations, the designing is however made respecting the general current regulations, and homologation tests are made in BLF's laboratory.
All the products made undergo examinations and tests in order to grant correspondence with the established requirements. Every final reel is seriated and a specimen is kept, by BLF for at least two years. The outgoing products are checked dimensionally on 100% of the final reels.
All electric cables are tested electrically 100% (spark tester) both on the extrusion line and during conclusive packaging. Possible imperfections are eliminated.
Interruptions are indicated with an appropriate label in the final packaging.
Furthermore, methodically, laboratory tests, as planned in the Quality Handbook and relevant Procedures are made, in order to check the behaviour of the product and of the components used. The laboratory tests are made in accordance with the norms of reference. As example we list the most common tests on cables and relevant norms:

TYPE OF TEST	CONDITION	TEST METHOD
Elongation and Tensile Strength	Original condition and after ageing	CEI-EN 60811
Ohm resistance test	Original condition	CEI-EN 50395
Dielectric strength test	Original condition	CEI-EN 50395
Flame test	Original condition	CEI-EN 60332-1-2
Flexibility test	Original condition	CEI-EN 50396

Other tests are made when provided from the norms of construction or the terms of the contract.