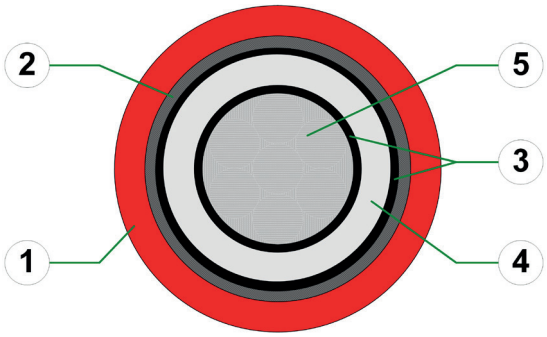
Data sheet
chainflex® CFCRANE

Medium voltage cable (Class 6.6.3.1) ● For maximum voltages and outputs ● igupren outer jacket ● Shielded ● Oil-resistant ● Flame-retardant



1. Outer jacket: Pressure extruded, especially abrasion-resistant and highly bending-stable igupren mixture
2. Overall shield: Extremely bending-resistant wrapping made of tinned copper wires
3. Core insulation: Conductive rubber
4. Core insulation: Extruded EPR insulation between conductive rubber
5. Conductor: Conductor rope in especially bending-stable version consisting of tinned copper wires

Example image
For detailed overview please see design table

Example image

Cable structure

Conductor — Highly-flexible cable consisting of tinned copper wires (according to DIN EN 60228).

Core insulation — Inner and outer semiconducting layer made of conductive rubber. Insulating sheath made of highly-quality, heat-resistant and ozone-proof ethylene propylene rubber (EPR).

Overall shield — Extremely bending-resistant, tinned copper shield.
Coverage approx. 95% optical

Outer jacket — Low-adhesion iguprene mixture, especially abrasion resistant, adapted to suit the requirements in e-chains® (following VDE 0207, Part 21).
Colour: Flame red (similar to RAL 3000)
Printing: Embossing

igus chainflex CFCRANE--.--① 6/10 kV Ubmax 12 kV CE Y Y/WW

RoHS-II conform www.igus.de +++ chainflex cable works +++

① Cable identification according to Part No. (see technical table).
Example: ... chainflex **CFCRANE 1x95/16-6/10kV** ...

Guarantee igus chainflex 4 YEARS up to 4 years guarantee

igus 4-year chainflex cable guarantee and service life calculator based on 2 billion test cycles per year

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Dynamic information

Bend radius	**e-chain® linear**	minimum 10 x d
	flexible	minimum 8 x d
	fixed	minimum 5 x d
Temperature	**e-chain® linear**	-20°C up to +80°C
	flexible	-25°C up to +80°C (following DIN EN 60811-504)
	fixed	-30°C up to +80°C (following DIN EN 50305)
v max.	**unsupported**	10m/s
	gliding	6m/s
a max.		50m/s²
Travel distance		Unsupported travels and up to 400m and more for gliding applications, Class 6

These values are based on specific applications or tests. They do not represent the limit of what is technically feasible.

Guaranteed service life according to guarantee conditions

Double strokes	5 million	7.5 million	10 million
Temperature, from/to [°C]	R min. [x d]	R min. [x d]	R min. [x d]
-20/-10	12.5	13.5	14.5
-10/+70	10	11	12
+70/+80	12.5	13.5	14.5

Minimum guaranteed service life of the cable under the specified conditions.
The installation of the cable is recommended within the middle temperature range.

Electrical information

Nominal voltage 6/10kV (following DIN VDE 0250), other voltages upon request.

Testing voltage 21 kV (following IEC 60502, part 2, chapter 16.4.4, table 11)

Info The maximum, continuously permissible operating voltage U_{bmax} for the CFCRANE items listed on page 5 is 12kV (three-phase system) based on DIN VDE 0298, part 3.

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Example image

Properties and approvals

UV resistance	High
Oil resistance	Oil-resistant (following DIN EN 60811-404)
Flame-retardant	According to IEC 60332-1-2
Silicone-free	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
PTFE-free	The design of these products does not contain PTFE
UL-verified	Certificate No. V293650: „igus 4-year chainflex cable guarantee and service life calculator based on 2 billion test cycles per year“
REACH	In accordance with regulation (EC) No. 1907/2006 (REACH)
Lead-free	Following 2011/65/EC (RoHS-II/ RoHS-III)
CE	Following 2014/35/EU

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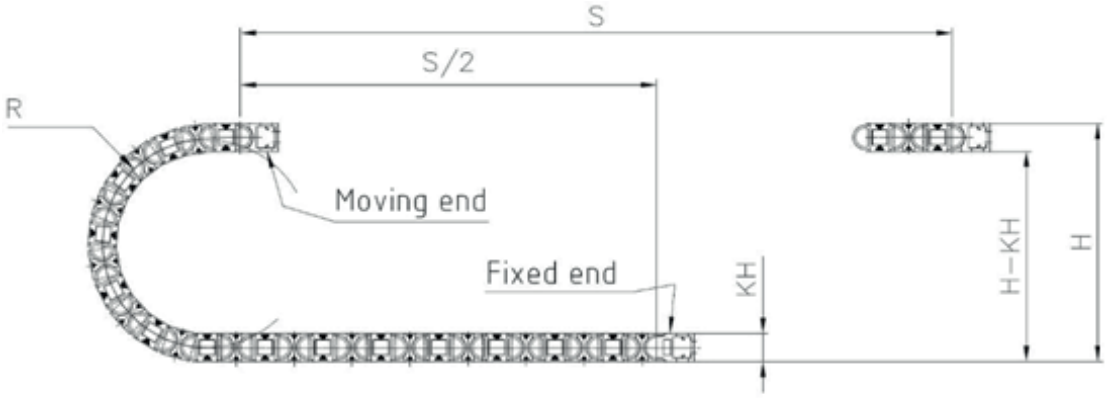
Example image

Typical lab test setup for this cable series

Test bend radius R	approx. 250 - 300 mm
Test travel S	approx. 1 - 15 m
Test duration	minimum 2 - 4 million double strokes
Test speed	approx. 0.5 - 2 m / s
Test acceleration	approx. 0.5 - 1,5 m / s²



Typical mechanical application areas

- For maximum voltages and outputs, Class 6
- Unsupported travels and up to 400m and more for gliding applications, Class 6
- Almost unlimited resistance to oil, Class 3
- No torsion, Class 1
- Indoor and outdoor applications, UV-resistant
- Ship to shore, crane applications, conveyor technology

Guarantee igus chainflex 4 YEARS up to 4 years guarantee

igus 4-year chainflex cable guarantee and service life calculator based on 2 billion test cycles per year

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Example image

Technical tables:

Mechanical information

Part No.	Number of cores and conductor nominal cross section [mm²]	Outer diameter (d) max. [mm]	Copper index [kg/km]	Weight [kg/km]
CFCRANE1x25/16-6/10kV	(1x25/16)C	25.5	526	977
CFCRANE1x35/16-6/10kV	(1x35/16)C	26.5	653	1123
CFCRANE1x50/16-6/10kV	(1x50/16)C	27.5	676	1279
CFCRANE1x70/16-6/10kV	(1x70/16)C	30.5	1036	1626
CFCRANE1x95/16-6/10kV	(1x95/16)C	33.5	1307	2002
CFCRANE1x120/16-6/10kV	(1x120/16)C	35.0	1593	2332
CFCRANE1x185/25-6/10kV	(1x185/25)C	39.0	2311	3241

Note: The given outer diameters are maximum values and may tend toward lower tolerance limits.
G = with green-yellow earth core **x =** without earth core

Electrical information

Conductor nominal cross section [mm²]	Maximum conductor resistance at 20 °C (following DIN EN 50289-1-2) [Ω/km]	Maximum current rating at 30 °C (following DIN VDE 0298-4) [A]
25	0.795	144
35	0.565	179
50	0.393	228
70	0.277	285
95	0.210	348
120	0.164	394
185	0.108	532

The final maximum current rating depends among other things on the ambient conditions, the type of the installation and the number of loaded cores.

Short circuit capacity (I_{thz}) according to DIN VDE 0298-4 (at $T_{Conductor}$ = 80 °C and $T_{Short\ circuit}$ = 200 °C)

Conductor nominal cross section (S_n) [mm²]	Short circuit capacity (I_{thz}) [kA] [t_k = 1 s]	Short circuit capacity (I_{thz}) [kA] [t_k = 0,5 s]
25	3.2	4.5
35	4.5	6.3
50	6.4	9.1
70	9.0	12.7
95	12.2	17.2
120	15.4	21.7
185	23,7	33,5

J_{thr}: Short-time current density = 128 A/mm²
S_n: Nominal cross section
t_{kr}: Rated short-circuit duration = 1 s
t_k: Short-circuit duration

$$I_{thz} = J_{thr} \bullet S_n \bullet \sqrt{\frac{t_{kr}}{t_k}}$$

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