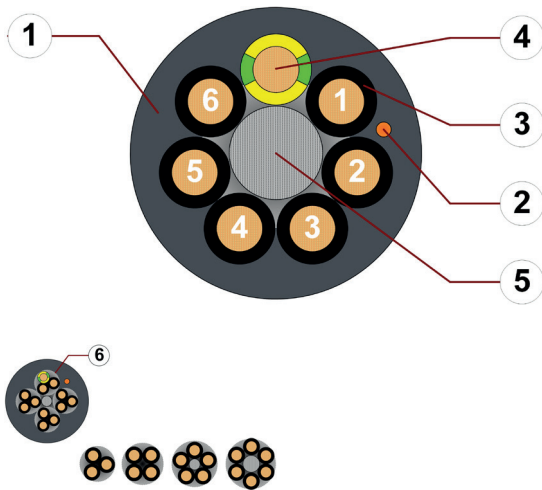


# Data sheet

## chainflex® CF9.UL



- Control cable (Class 6.6.4.2) ● For extremely heavy duty applications ● TPE outer jacket  
 ● Oil and bio-oil resistant ● Flame retardant ● PVC-free ● Low-temperature-flexible  
 ● Hydrolysis and microbe-resistant



1. Outer jacket: Pressure extruded, gusset-filling, flame-retardant TPE mixture
2. CFRIP: Tear strip for faster cable stripping
3. Core insulation: Mechanically high-quality TPE mixture
4. Conductor: Stranded conductor in especially bend-resistant version consisting of bare copper wires
5. Strain relief: Tensile stress-resistant centre element
6. 12 cores or more: Bundles with optimised pitch length and pitch direction

**Example image**  
 For detailed overview please see design table

### Cable structure

- Conductor** Stranded conductor in especially bending-resistant version consisting of bare copper wires (following DIN EN 60228).
- Core insulation** Mechanically high-quality TPE mixture.
- Core structure** **Number of cores < 12:** Cores wound in a layer with short pitch length. **Number of cores ≥ 12:** Cores wound in bundles which are then wound around a high tensile strength centre element, all with optimised short pitch lengths and directions. Especially low-torsion structure.
- Core identification** **Cores < 0.75 mm<sup>2</sup>:** Colour code in accordance with DIN 47100. **Cores ≥ 0.75 mm<sup>2</sup>:** Black cores with white numbers, one green-yellow core.  
**CF9.UL.02.03.INI:** brown, blue, black  
**CF9.UL.03.04.INI:** brown, blue, black, white  
**CF9.UL.03.05.INI:** brown, blue, black, white, green-yellow
- Outer jacket** Low-adhesion, extremely abrasion-resistant and highly flexible TPE mixture, adapted to suit the requirements in e-chains®.  
 Colour: Slate grey (similar to RAL 7015)  
 Printing: white
- CFRIP®** Strip cables faster: a tear strip is moulded into the outer jacket  
 Video ▶ [www.igus.eu/CFRIP](http://www.igus.eu/CFRIP)

„00000 m<sup>4</sup>\*\*\* igus chainflex CF9.UL.--.---① -----② 300/500V E310776  
 cRUus AWM Style -----③ VW-1 AWM I/II A/B 90°C ---V④ FT1 DNV TAE00003X2  
 EAC CE UKCA RoHS-II conform [www.igus.eu](http://www.igus.eu) +++ chainflex cable works +++

\* **Length printing:** Not calibrated. Only intended as an orientation aid.  
 ① / ② Cable identification according to Part No. (see technical table).  
 ③ / ④ Printing of the UL style (see related chapter).  
 Example: ... chainflex **CF9.UL.02.02 2x0,25 300/500 V** ...



igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year









# Data sheet

## chainflex® CF9.UL



Control cable (Class 6.6.4.2) ● For extremely heavy duty applications ● TPE outer jacket  
 ● Oil and bio-oil resistant ● Flame retardant ● PVC-free ● Low-temperature-flexible  
 ● Hydrolysis and microbe-resistant

### Dynamic information

	<b>Bend radius</b>	<b>e-chain® linear</b> <b>flexible</b> <b>fixed</b>	minimum 5 x d minimum 4 x d minimum 3 x d
	<b>Temperature</b>	<b>e-chain® linear</b> <b>flexible</b> <b>fixed</b>	-35 °C up to +100 °C -45 °C up to +100 °C (following DIN EN 60811-504) -50 °C up to +100 °C (following DIN EN 50305)
	<b>v max.</b>	<b>unsupported</b> <b>gliding</b>	10 m/s 6 m/s
	<b>a max.</b>		100 m/s <sup>2</sup>
	<b>Travel distance</b>		Unsupported travel distances and up to 400 m for gliding applications, Class 6
	<b>Torsion</b>		± 90°, with 1 m cable length, Class 2



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
<b>Temperature, from/to [°C]</b>	<b>R min. [Faktor x d]</b>	<b>R min. [Faktor x d]</b>	<b>R min. [Faktor x d]</b>
-35/-25	6.8	7.5	8.5
-25/+90	5	6	7
+90/+100	6.8	7.5	8.5

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

	<b>Nominal voltage</b>	300/500 V (following DIN VDE 0298-3) <b>Cores &lt; 0.5 mm<sup>2</sup>:</b> 300 V (following UL) <b>Cores ≥ 0.5 mm<sup>2</sup>:</b> 1000 V (following UL)
	<b>Testing voltage</b>	2000 V (following DIN EN 50395)



Example image

igus® chainflex® CF9.UL

# Data sheet















## chainflex® CF9.UL



- Control cable (Class 6.6.4.2) ● For extremely heavy duty applications ● TPE outer jacket
- Oil and bio-oil resistant ● Flame retardant ● PVC-free ● Low-temperature-flexible
- Hydrolysis and microbe-resistant

### Properties and approvals



	<b>UV resistance</b>	High
	<b>Oil resistance</b>	Oil-resistant (following DIN EN 60811-404), bio-oil-resistant (following VDMA 24568 with Plantocut 8 S-MB tested by DEA), Class 4
	<b>Flame retardant</b>	According to IEC 60332-1-2, Cable Flame, VW-1, FT1, FT2 / Horizontal Flame
	<b>Silicone-free</b>	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
	<b>UL verified</b>	Certificate No. B129699: „igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year“
	<b>UL/CSA AWM</b>	See table UL/CSA for details
	<b>NFPA</b>	Following NFPA 79-2018, chapter 12.9
	<b>DNV</b>	Type approval certificate No. TAE00003X2
	<b>EAC</b>	Certificate No. RU C-DE.ME77.B.00300/19
	<b>REACH</b>	In accordance with regulation (EC) No. 1907/2006 (REACH)
	<b>Lead-free</b>	Following 2011/65/EC (RoHS-II/RoHS-III)
	<b>Cleanroom</b>	According to ISO Class 1. The outer jacket material of this series complies with CF34. UL.25.04.D - tested by IPA according to standard DIN EN ISO 14644-1
	<b>CE</b>	Following 2014/35/EU
	<b>UKCA</b>	In accordance with the valid regulations of the United Kingdom (as at 08/2021)



Example image  
igus® chainflex® CF9.UL

# Data sheet

## chainflex® CF9.UL



- Control cable (Class 6.6.4.2) ● For extremely heavy duty applications ● TPE outer jacket
- Oil and bio-oil resistant ● Flame retardant ● PVC-free ● Low-temperature-flexible
- Hydrolysis and microbe-resistant

### Properties and approvals

UL/CSA AWM details

Conductor nominal cross section [mm <sup>2</sup> ]	Number of cores	UL style core insulation	UL style outer jacket	UL Voltage Rating [V]	UL Temperature Rating [°C]
0.25	2-8	11884	22345	300	90
0.25	12	11884	22344	300	90
0.34	4-8	11884	22345	300	90
0.5	2-7	11886	22022	1000	90
0.5	12-25	11886	22021	1000	90
0.75	5-7	11886	22022	1000	90
0.75	12-25	11886	22021	1000	90
1	3-4	11886	22022	1000	90
1	12-25	11886	22021	1000	90
1.5	4-7	11886	22022	1000	90
1.5	12-25	11886	22021	1000	90
2.5	4-7	11886	22022	1000	90
2.5	12-25	11886	22021	1000	90
4	4	11886	22022	1000	90
6	4	11886	22022	1000	90



igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year



Example image

# Data sheet

## chainflex® CF9.UL

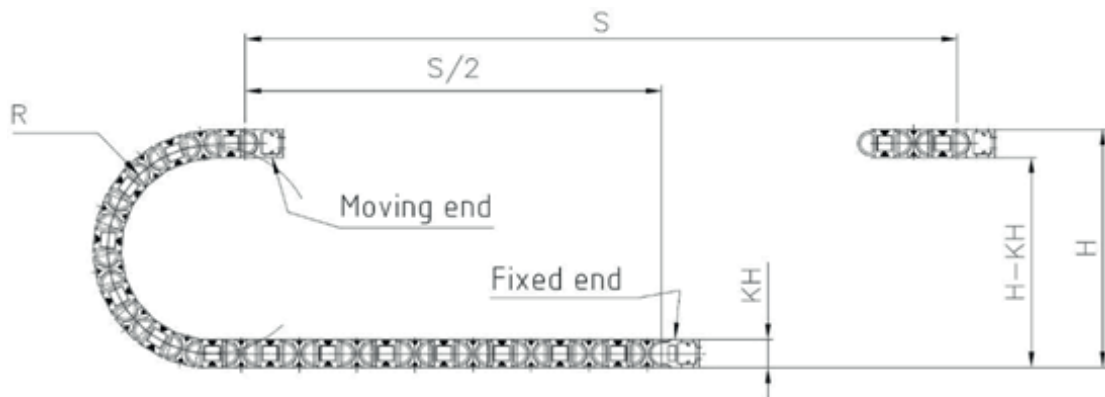


- Control cable (Class 6.6.4.2) ● For extremely heavy duty applications ● TPE outer jacket  
 ● Oil and bio-oil resistant ● Flame retardant ● PVC-free ● Low-temperature-flexible  
 ● Hydrolysis and microbe-resistant



### Typical lab test setup for this cable series

Test bend radius R	approx. 28 - 125 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 / s <sup>2</sup>



### Typical application areas

- For heaviest duty applications, Class 6
- Unsupported travel distances and up to 400 m and more for gliding applications, Class 6
- Almost unlimited resistance to oil, also with bio-oils, Class 4
- Torsion ± 90°, with 1 m cable length, Class 2
- Indoor and outdoor applications, UV-resistant
- Storage and retrieval units for high-bay warehouses, Machining units/machine tools, quick handling, Clean room, semiconductor insertion, Ship to shore, outdoor cranes, low temperature applications



igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year



Example image

igus® chainflex® CF9.UL

# Data sheet

## chainflex® CF9.UL



- Control cable (Class 6.6.4.2) ● For extremely heavy duty applications ● TPE outer jacket
- Oil and bio-oil resistant ● Flame retardant ● PVC-free ● Low-temperature-flexible
- Hydrolysis and microbe-resistant

### Technical tables:

#### Mechanical information

Part No.	Number of cores and conductor nominal cross section [mm <sup>2</sup> ]	Outer diameter (d) max. [mm]	Copper index [kg/km]	Weight [kg/km]
CF9.UL.02.02	2x0.25	5.0	5	24
CF9.UL.02.03.INI	3x0.25	5.0	8	28
CF9.UL.02.04	4x0.25	5.5	10	33
CF9.UL.02.06	6x0.25	6.0	15	42
CF9.UL.02.08	8x0.25	7.5	20	58
CF9.UL.02.12	12x0.25	7.5	30	82
CF9.UL.03.04.INI	4x0.34	5.5	14	38
CF9.UL.03.05.INI	5x0.34	6.0	17	44
CF9.UL.03.06	6x0.34	6.5	21	52
CF9.UL.03.08	8x0.34	7.5	27	67
CF9.UL.05.02	2x0.5	5.5	10	35
CF9.UL.05.03	3x0.5	6.0	15	41
CF9.UL.05.04	4x0.5	6.0	20	50
CF9.UL.05.05	5x0.5	6.5	25	56
CF9.UL.05.07	7x0.5	7.5	35	78
CF9.UL.05.12	12x0.5	9.5	60	136
CF9.UL.05.18	18x0.5	12.0	90	200
CF9.UL.07.05	5G0.75	7.0	38	78
CF9.UL.07.07	7G0.75	8.5	53	104
CF9.UL.07.12	12G0.75	11.0	90	191
CF9.UL.07.25	25G0.75	15.0	186	366
CF9.UL.10.03	3G1.0	6.5	30	62
CF9.UL.10.04	4G1.0	7.0	40	79
CF9.UL.10.12	12G1.0	11.5	119	229
CF9.UL.10.18	18G1.0	14.5	178	332
CF9.UL.10.25	25G1.0	16.0	248	439
CF9.UL.15.04	4G1.5	8.0	60	102
CF9.UL.15.05	5G1.5	8.5	75	123
CF9.UL.15.07 <sup>17)</sup>	7G1.5	10.0	104	167
CF9.UL.15.12	12G1.5	13.0	178	307
CF9.UL.15.18	18G1.5	16.0	267	448
CF9.UL.15.25	25G1.5	19.0	371	652

<sup>17)</sup> When using the cables with „7G1.5mm<sup>2</sup>“ and „7G2.5mm<sup>2</sup>“ minimum bend radius must be 17.5xd with gliding travel distance ≥ 5m.

**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



Example image



igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year



# Data sheet

## chainflex® CF9.UL



- Control cable (Class 6.6.4.2) ● For extremely heavy duty applications ● TPE outer jacket  
 ● Oil and bio-oil resistant ● Flame retardant ● PVC-free ● Low-temperature-flexible  
 ● Hydrolysis and microbe-resistant



Part No.	Number of cores and conductor nominal cross section [mm <sup>2</sup> ]	Outer diameter (d) max. [mm]	Copper index [kg/km]	Weight [kg/km]
CF9.UL.25.04	4G2.5	9.0	100	165
CF9.UL.25.05	5G2.5	10.0	125	202
CF9.UL.25.07 <sup>17)</sup>	7G2.5	12.0	174	282
CF9.UL.25.12	12G2.5	16.0	297	521
CF9.UL.25.18	18G2.5	20.0	445	769
CF9.UL.25.25	25G2.5	23.5	612	1045
CF9.UL.40.04	4G4.0	10.5	159	222

<sup>17)</sup> When using the cables with „7G1.5mm<sup>2</sup>“ and „7G2.5mm<sup>2</sup>“ minimum bend radius must be 17.5xd with gliding travel distance ≥ 5m.

**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 [mm <sup>2</sup> ]	Maximum conductor resistance at 20 °C (following DIN EN 50289-1-2) [Ω/km]	Max. current rating at 30 °C [A]
0.25	79	5
0.34	57	7
0.5	39	10
0.75	26	14
1	19.5	17
1.5	13.3	21
2.5	8	30
4	4.95	41
6	3.3	53

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



igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year



Example image

igus® chainflex® CF9.UL

# Data sheet

## chainflex® CF9.UL



- Control cable (Class 6.6.4.2) ● For extremely heavy duty applications ● TPE outer jacket
- Oil and bio-oil resistant ● Flame retardant ● PVC-free ● Low-temperature-flexible
- Hydrolysis and microbe-resistant

### Design table



Part No.	Number of cores	Core design	Part No.	Number of cores	Core design
CF9.UL.XX.02	2		CF9.UL.XX.06	6	
CF9.UL.XX.03.INI	3		CF9.UL.XX.07	7	
CF9.UL.XX.03	3		CF9.UL.XX.08	8	
CF9.UL.XX.04	4		CF9.UL.XX.12	4x3	
CF9.UL.XX.04.INI	4		CF9.UL.XX.18	6x3	
CF9.UL.XX.05.INI	5		CF9.UL.XX.25	5x5	
CF9.UL.XX.05	5				



igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year





# Data sheet

## chainflex® CF9.UL



Control cable (Class 6.6.4.2) ● For extremely heavy duty applications ● TPE outer jacket  
 ● Oil and bio-oil resistant ● Flame retardant ● PVC-free ● Low-temperature-flexible  
 ● Hydrolysis and microbe-resistant

### Colour code in accordance with DIN 47100

Conductor no.	Colours according to DIN ISO 47100	Conductor no.	Colours according to DIN ISO 47100
1	white	19	white-pink
2	brown	20	pink-brown
3	green	21	white-blue
4	yellow	22	brown-blue
5	grey	23	white-red
6	pink	24	brown-red
7	blue	25	white-black
8	red	26	brown-black
9	black	27	grey-green
10	violet	28	yellow-grey
11	grey-pink	29	pink-green
12	red-blue	30	yellow-pink
13	white-green	31	green-blue
14	brown-green	32	yellow-blue
15	white-yellow	33	green-red
16	yellow-brown	34	yellow-red
17	white-grey	35	green-black
18	grey-brown	36	yellow-black



igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year



Example image