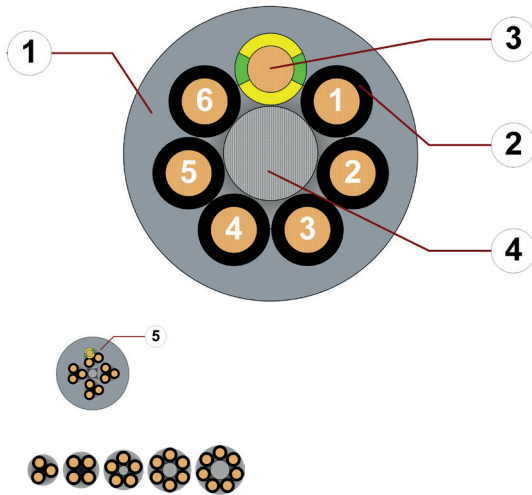


# Data sheet

## chainflex® CF77.UL.D



Control cable (Class 5.5.3.3) ● For heavy duty applications ● PUR outer jacket ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant



1. Outer jacket: Pressure extruded, gusset-filling PUR mixture
2. Core insulation: Mechanically high-quality TPE mixture
3. Conductor: Fine-wire strand consisting of bare copper wires
4. Strain relief: Tensile stress-resistant centre element
5. 12 cores or more: Bundles with optimised pitch length and pitch direction

Example image  
For detailed overview please see design table

### Cable structure

	<b>Conductor</b>	Finely stranded conductor consisting of bare copper wires (following DIN EN 60228).
	<b>Core insulation</b>	Mechanically high-quality TPE mixture.
	<b>Core structure</b>	<b>Number of cores &lt; 12:</b> Cores wound in a layer with short pitch length. <b>Number of cores ≥ 12:</b> 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.
	<b>Core identification</b>	<b>Cores &lt; 0.5 mm<sup>2</sup>:</b> Colour code in accordance with DIN 47100. <b>Cores ≥ 0.5 mm<sup>2</sup>:</b> Black cores with white numbers, one green-yellow core. <b>CF77.UL.02.03.INI:</b> brown, blue, black <b>CF77.UL.03.04.INI:</b> brown, blue, black, white
	<b>Outer jacket</b>	Low-adhesion, halogen-free, highly abrasion resistant PUR mixture, adapted to suit the requirements in e-chains® (following DIN EN 50363-10-2). Colour: Window-grey (similar to RAL 7040) Printing: black

„00000 m<sup>\*\*\*</sup> igus chainflex CF77.UL.-.D① --② -/V③ E310776  
cRUus AWM Style -----④ VW-1 AWM I/II A/B 80°C ---V⑤ FT-1 GL 61 935-14 HH  
EAC/CTP CE DESINA RoHS-II conform www.igus.de +++ 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 Printing of nominal voltage (see general electrical values).  
④ / ⑤ Printing of the UL Style / Voltage (see certifications for details).  
Example: ... chainflex ... CF77.UL.02.04.D ... 4x0.25 ... 300 V/500 V ...









# Data sheet

## chainflex® CF77.UL.D



Control cable (Class 5.5.3.3) ● For heavy duty applications ● PUR outer jacket ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant

### Dynamic information

	<b>Bend radius</b>	<b>e-chain® linear</b> <b>flexible</b> <b>fixed</b>	minimum 6.8 x d minimum 5 x d minimum 4 x d
	<b>Temperature</b>	<b>e-chain® linear</b> <b>flexible</b> <b>fixed</b>	-25 °C up to +80 °C -40 °C up to +80 °C (following DIN EN 60811-504) -50 °C up to +80 °C (following DIN EN 50305)
	<b>v max.</b>	<b>unsupported</b> <b>gliding</b>	10 m/s 5 m/s
	<b>a max.</b>		80 m/s <sup>2</sup>
	<b>Travel distance</b>		Unsupported travels and up to 100 m for gliding applications, Class 5
	<b>Torsion</b>		± 180°, with 1 m cable length, Class 3 (except for 5-core types ≥ 4.0 mm <sup>2</sup> Product range table)



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	
	< 10 m	≥ 10 m	< 10 m	≥ 10 m	< 10 m	≥ 10 m
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-25/-15	8.5	10	9.5	11	10.5	12
-15/+70	6.8	7.5	7.5	8.5	8.5	9.5
+70/+80	8.5	10	9.5	11	10.5	12

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>Testing voltage</b>	2000 V (following DIN EN 50395)

Example image  
igus® chainflex® CF77.UL.D



# Data sheet

## chainflex® CF77.UL.D



Control cable (Class 5.5.3.3) ● For heavy duty applications ● PUR outer jacket ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant

### Properties and approvals



	<b>UV resistance</b>	Medium
	<b>Oil resistance</b>	Oil-resistant (following DIN EN 50363-10-2), Class 3
	<b>Offshore</b>	MUD-resistant following NEK 606 - status 2009
	<b>Flame retardant</b>	According to IEC 60332-1-2, CEI 20-35, FT1, VW-1
	<b>Silicone-free</b>	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
	<b>Halogen-free</b>	Following DIN EN 60754
	<b>UL/CSA</b>	<b>Cores &lt; 0.5 mm<sup>2</sup>:</b> Style 10493 and 20233, 300 V, 80 °C <b>Cores ≥ 0.5 mm<sup>2</sup>:</b> Style 11323 and 21223, 1000 V, 80 °C
	<b>NFFPA</b>	Following NFFPA 79-2018, chapter 12.9
	<b>DNV-GL</b>	Type approval certificate No. 61 935-14 HH
	<b>EAC</b>	Certificate No. RU C-DE.ME77.B.01254 (TR ZU)
	<b>CTP</b>	Certificate No. C-DE.PB49.B.00416 (Fire protection)
	<b>CEI</b>	Following CEI 20-35
	<b>Lead-free</b>	Following 2011/65/EC (RoHS-II)
	<b>Clean room</b>	According to ISO Class 1, material/cable tested by IPA according to DIN EN ISO standard 14644-1
	<b>DESINA</b>	According to VDW, DESINA standardisation
	<b>CE</b>	Following 2014/35/EU



# Data sheet

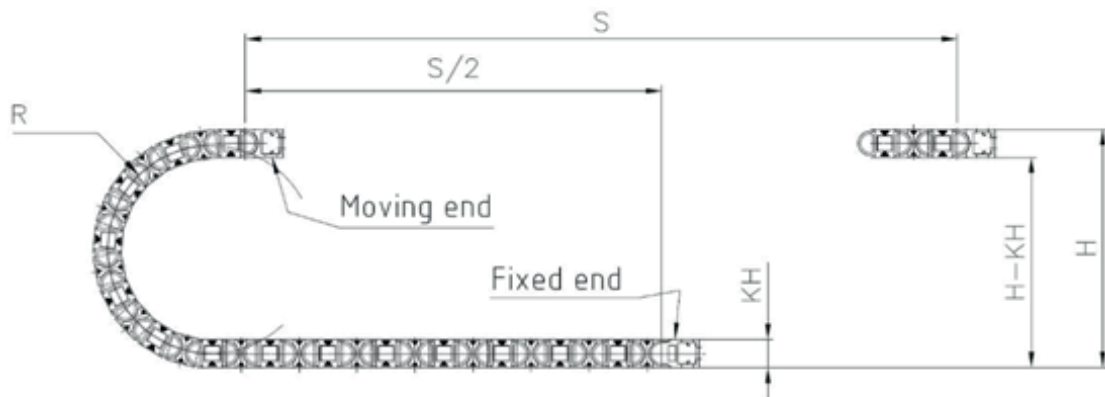
## chainflex® CF77.UL.D



Control cable (Class 5.5.3.3) ● For heavy duty applications ● PUR outer jacket ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant

### Typical lab test setup for this cable series

Test bend radius R	approx. 48 - 200 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 heavy duty applications, Class 5
- Unsupported travel distances and up to 100 m for gliding applications, Class 5
- Almost unlimited resistance to oil, Class 3
- Torsion ± 180°, with 1 m cable length, Class 3
- Indoor and outdoor applications with average sun radiation
- Machining units/machine tools, Storage and retrieval units for high-bay warehouses, Packaging industry, quick handling, refrigerating sector



Example image



# Data sheet

## chainflex® CF77.UL.D



Control cable (Class 5.5.3.3) ● For heavy duty applications ● PUR outer jacket ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● 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]
CF77.UL.02.03.INI <sup>12)</sup>	3x0.25	5.0	8	29
CF77.UL.02.04.D	4x0.25	5.5	11	35
CF77.UL.02.05.D	5x0.25	6.0	13	41
CF77.UL.02.07.D	7x0.25	6.5	18	51
CF77.UL.02.12.D	12x0.25	9.0	30	77
CF77.UL.02.18.D	18x0.25	10.5	45	114
CF77.UL.02.25.D	25x0.25	11.5	63	15
CF77.UL.03.04.INI <sup>12)</sup>	4x0.34	6.0	16	39
CF77.UL.05.04.D	4G0.5	6.0	21	43
CF77.UL.05.05.D	5G0.5	6.5	26	50
CF77.UL.05.07.D	7G0.5	7.5	39	78
CF77.UL.05.12.D	12G0.5	10.0	63	129
CF77.UL.05.18.D	18G0.5	12.0	94	179
CF77.UL.05.25.D	25G0.5	14.0	129	238
CF77.UL.05.30.D	30G0.5	15.0	155	315
CF77.UL.07.03.D	3G0.75	6.5	23	54
CF77.UL.07.04.D	4G0.75	7.0	30	63
CF77.UL.07.05.D	5G0.75	7.5	38	73
CF77.UL.07.07.D	7G0.75	8.5	53	103
CF77.UL.07.12.D	12G0.75	12.0	90	187
CF77.UL.07.18.D	18G0.75	13.5	134	251
CF77.UL.07.20.D	20G0.75	14.5	149	282
CF77.UL.07.25.D	25G0.75	16.0	186	356
CF77.UL.07.36.D	36G0.75	19.0	279	505
CF77.UL.07.42.D	42G0.75	21.0	341	580
CF77.UL.10.02.D	2x1.0	6.5	20	53
CF77.UL.10.03.D	3G1.0	6.5	30	63
CF77.UL.10.04.D	4G1.0	7.0	40	77
CF77.UL.10.05.D	5G1.0	8.0	50	94
CF77.UL.10.07.D	7G1.0	9.0	70	115
CF77.UL.10.12.D	12G1.0	12.5	119	225
CF77.UL.10.18.D	18G1.0	15.0	178	326
CF77.UL.10.25.D	25G1.0	17.5	248	436
CF77.UL.10.42.D	42G1.0	22.5	433	679

<sup>12)</sup> Colour outer jacket: Colza yellow (similar to RAL 1021)

**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



# Data sheet

## chainflex® CF77.UL.D



Control cable (Class 5.5.3.3) ● For heavy duty applications ● PUR outer jacket ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● 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]
CF77.UL.15.03.D	3G1.5	7.5	45	83
CF77.UL.15.04.D	4G1.5	8.0	60	102
CF77.UL.15.05.D	5G1.5	8.5	75	121
CF77.UL.15.07.D <sup>17)</sup>	7G1.5	10.5	104	167
CF77.UL.15.12.D	12G1.5	14.0	178	296
CF77.UL.15.18.D	18G1.5	17.0	267	459
CF77.UL.15.25.D	25G1.5	19.5	371	605
CF77.UL.15.36.D	36G1.5	23.5	551	848
CF77.UL.15.42.D <sup>11)</sup>	42G1.5	26.5	676	987
CF77.UL.25.03.D	3G2.5	8.5	75	119
CF77.UL.25.04.D	4G2.5	9.5	100	149
CF77.UL.25.05.D	5G2.5	10.5	124	183
CF77.UL.25.07.D <sup>17)</sup>	7G2.5	12.5	174	259
CF77.UL.25.12.D	12G2.5	17.0	297	451
CF77.UL.40.04.D	4G4.0	11.5	165	245
CF77.UL.40.05.D	5G4.0	12.0	198	288
CF77.UL.60.05.D	5G6.0	14.0	297	407

<sup>11)</sup> Phase-out model

<sup>17)</sup> When using the cables with "7 G 1.5 mm<sup>2</sup>" and "7 G 2.5 mm<sup>2</sup>" minimum bend radius must be 17.5 x d with gliding travel distance ≥ 5 m.

**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® chainflex® CF77.UL.D

# Data sheet

## chainflex® CF77.UL.D



Control cable (Class 5.5.3.3) ● For heavy duty applications ● PUR outer jacket ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant



### Electrical information

Conductor nominal cross section [mm <sup>2</sup> ]	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]
0.25	79.0	5
0.34	57.0	7
0.5	39.0	10
0.75	26.0	14
1	19.5	17
1.5	13.3	21
2.5	8.0	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.



Example image

# Data sheet

## chainflex® CF77.UL.D



Control cable (Class 5.5.3.3) ● For heavy duty applications ● PUR outer jacket ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant

### Design table

Part No.	Number of cores	Core design	Part No.	Number of cores	Core design
CF77.UL.XX.02.D	2		CF77.UL.XX.12.D	4x3	
CF77.UL.XX.03.INI	3		CF77.UL.XX.18.D	6x3	
CF77.UL.XX.03.D	3		CF77.UL.XX.20.D	5x4	
CF77.UL.XX.04.D	4		CF77.UL.XX.25.D	5x5	
CF77.UL.XX.04.INI	4		CF77.UL.XX.30.D	6x5	
CF77.UL.XX.05.D	5		CF77.UL.XX.36.D	6x5	
CF77.UL.XX.07.D	7		CF77.UL.XX.42.D	7x6	

Example image

igus® chainflex® CF77.UL.D





# Data sheet

## chainflex® CF77.UL.D



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### Colour code in accordance with DIN 47100.

Conductor no.	Colours according to DIN ISO 47100	Conductor no.	Colours according to DIN ISO 47100	Conductor no.	Colours according to DIN ISO 47100
1	white	22	brown-blue	43	blue-black
2	brown	23	white-red	44	red-black
3	green	24	brown-red	45	white-brown-black
4	yellow	25	white-black	46	yellow-green-black
5	grey	26	brown-black	47	grey-pink-black
6	pink	27	grey-green	48	red-blue-black
7	blue	28	yellow-grey	49	white-green-black
8	red	29	pink-green	50	brown-green-black
9	black	30	yellow-pink	51	white-yellow-black
10	violet	31	green-blue	52	yellow-brown-black
11	grey-pink	32	yellow-blue	53	white-grey-black
12	red-blue	33	green-red	54	grey-brown-black
13	white-green	34	yellow-red	55	white-pink-black
14	brown-green	35	green-black	56	pink-brown-black
15	white-yellow	36	yellow-black	57	white-blue-black
16	brown-yellow	37	grey-blue	58	brown-blue-black
17	white-grey	38	pink-blue	59	white-red-black
18	brown-grey	39	grey-red	60	brown-red-black
19	white-pink	40	pink-red	61	black-white
20	white-brown	41	grey-black		
21	white-blue	42	pink-black		



Example image

