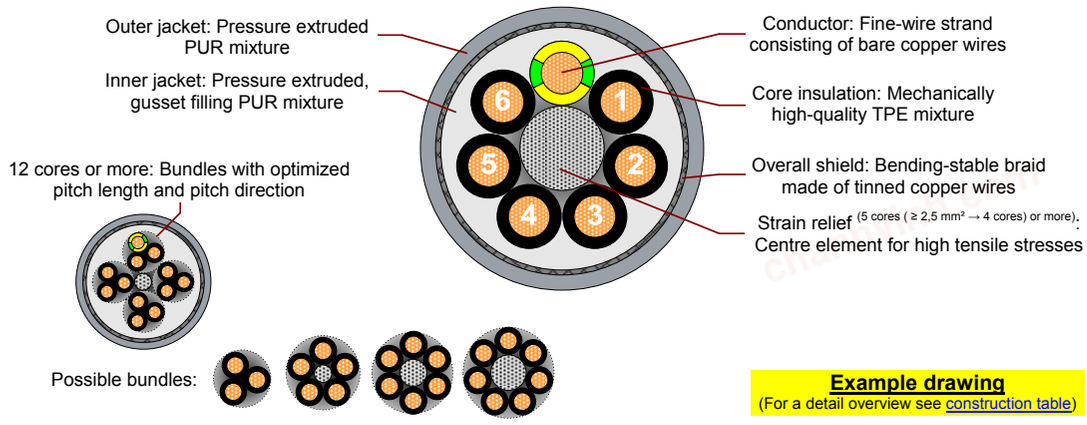
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chainflex® cable works. CF78.UL

PUR - e-chain® - control cable for high load requirements (class 5.5.3): shielded, oil- and coolant-resistant, hydrolysis- and microbe-resistant, PVC- and halogen-free, notch-resistant as well as flame-retardant.



Example drawing
(For a detail overview see construction table)

Core design:

Conductor: Fine-wire strand consisting of bare copper wires (following DIN EN 60228).
Core insulation: Mechanically high-quality TPE mixture.
Core identification: Black cores with white numerals & one core greenyellow.

Shield design:

Material: Bending-stable braid made of tinned copper wires.
Shield coverage: **Linear:** approx. 55 % **Optical**: approx. 80 %

Jacket design:

Inner jacket: PUR mixture adapted to suit the requirements in e-chains®.
Outer jacket: Low-adhesion mixture on the basis of PUR (following DIN VDE 0281-10), highly abrasion- and bending-stable, adapted to suit the requirements in e-chains®.

- oil-resistant (following DIN EN 50363-10-2)
- coolant-resistant
- flame-retardant (according to IEC 60332-1-2, CEI 20-35, VW-1, FT-1)
- PVC- and halogen-free (following DIN EN 50267-2-1)
- hydrolysis-resistant (following DIN VDE 0282 Part 10 - A)
- microbe-resistant (following DIN EN 50396)
- MUD-resistant (following NEK 606 - status 2009)
- silicon-free (following PV 3.10.7 - status 1992)
- lead-free (following 2011/65/EU (RoHS-II))
- clean room ISO class 1 (according to DIN ISO 14644-1 tested by IPA)
- UV-resistance: Medium

Colour outer jacket: Window grey (similar to RAL 7040)
Cable marking (Black):

„00000 m“* igus chainflex CF78.UL.--.--① -----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 RoHS-II conform www.igus.de
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***Length printing:** Not calibrated. Only intended as an orientation aid.*
① / ②: Cable identification according to part no. (see technical table for details).
③: Printing of the Nominal Voltage (see general electrical values for details).
Ex.: CF78.UL.05.04: ⇒ ...x CF78.UL.05.04 (4G0,5)C 300/500V E310776...
④ / ⑤: Printing of the UL-Style / -Voltage (see certifications for details).
Ex.: CF78.UL.05.04: ⇒ ...Style 21223 VW -1 AWM I/II A/B 90°C 1000V FT-1…

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igus® chainflex® CF78.UL
Image exemplary

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04 Feb. 2015	D. Borsberg

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General mechanical values:

(for individual details see technical table)

Guaranteed lifetime for this series according to the "chainflex® guarantee club" conditions (see chainflex® catalogue and www.igus.eu/chainflex-guarantee)							
Double strokes*		**5 million**		**7,5 million**		**10 million**	
Temperature (from/to) [°C]	**Travel distance (TD)**	Min. bending radius for e-chain® use [Factor multiplied by outer diameter (d)]					
		TD < 10 m	TD ≥ 10 m	TD < 10 m	TD ≥ 10 m	TD < 10 m	TD ≥ 10 m
-35 / -25	≤ 100 m	8,5	10,0	9,5	11,0	10,5	12,0
-25 / +70		6,8	7,5	7,8	8,5	8,8	9,5
+70 / +80		7,5	10,0	9,5	11,0	10,5	12,0

**: Minimum guarantee lifetime of the cable under the specified conditions.*
The installation of the cable is recommended within the middle temperature range.

Temperature range	**-40 °C ←**	**-35 °C ←**	**-25 °C ←→ +70 °C**	**→ +80 °C**
Min. bending radius for fixed installation	7,5 x d	6,8 x d	4,0 x d	6,8 x d
Torsion (at 1 m cable length)	---	±0 °	±30 °	±0 °

General electrical values:

(for individual details see technical table)

Nominal voltage:
Less than 12 cores (≤ 0,34 mm²): 300 / 300 V
Less than 12 cores (≥ 0,5 mm²): 300 / 500 V
12 cores or more: 300 / 300 V
⇒ (following DIN VDE 0245)

Test voltage: 2 kV (following VDE 0281-2)

Certifications:
- cULus: **≤ 0,34 mm²:** (E310776: Style 10493 & 20233, 300 V / 80 °C)
  ≥ 0,5 mm²: (E310776: Style 11323 & 21223, 1000 V / 80 °C)
- GL type approval certificate: No. 61 935-14 HH

Guidelines: CE, NFPA (following 79-2012 chapter 12.9), EAC & TR (CTP)

+++ chainflex® cable works +++

igus® chainflex® CF78.UL

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Image exemplary

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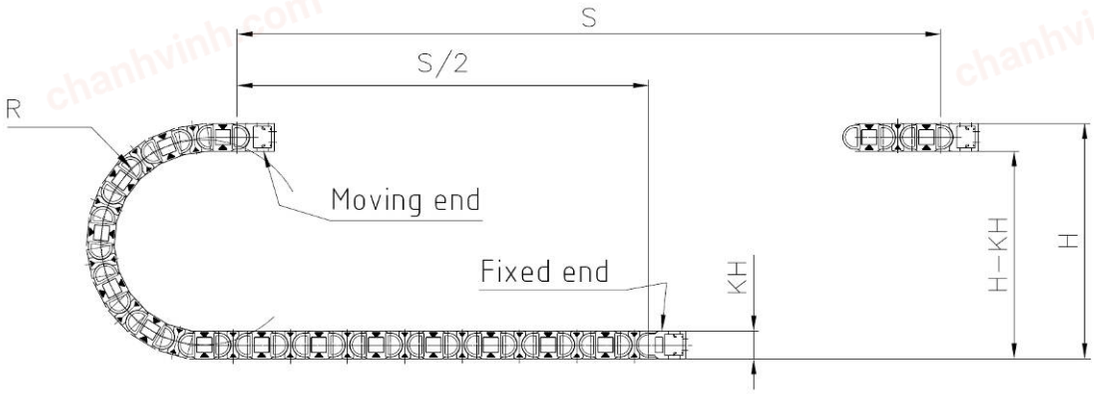
Dynamic values:

Max. speed for e-chain® use:**	**Unsupported:** v = 10 m / s **Gliding (up to 100 m):** v = 5 m / s
Max. acceleration for e-chain® use:**	a = 80 m / s^2

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

Typical lab test setup for this cable group:

Test bending radius R:	approx. 48 - 200 mm
Test travel S:	approx. 1 - 15 m
Test period:	min. 2 - 4 million double strokes
Test speed:	approx. 0,5 - 2 m / s
Test acceleration:	approx. 0,5 - 1,5 m / s^2



e-chain® - control cable for high load requirements:

- highly abrasion stable
- almost unlimited resistance to oil
- for unsupported travel distances and up to 100 m in gliding applications
- CE, RoHS-II, cЯUus, GL type approval certificate, NFPA, EAC & TR (CTP)

Typical application areas:
Indoor and outdoor applications with average sun radiation.
Machining units / machine tools, storage and retrieval units for high-bay warehouses, packing industry, quick handling, refrigerating sector.

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Image exemplary

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CF78.UL

PUR - e-chain® - control cable for high load requirements (class 5.5.3): shielded, oil- and coolant-resistant, hydrolysis- and microbe-resistant, PVC- and halogen-free, notch-resistant as well as flame-retardant.

Technical tables:

Mechanical values:

① Part no.	② Number of cores & nominal cross section [mm²]***	External diameter (d)**** [max. mm]	Copper index [kg / km]	Weight [kg / km]
CF78.UL.05.04	(4G0,5)C	8,0	40	79
CF78.UL.05.05	(5G0,5)C	8,0	48	94
CF78.UL.05.07	(7G0,5)C	9,5	62	123
CF78.UL.05.09	(9G0,5)C	11,0	81	148
CF78.UL.05.12	(12G0,5)C	12,5	97	207
CF78.UL.05.18	(18G0,5)C	14,5	156	257
CF78.UL.05.25	(25G0,5)C	16,0	180	366
CF78.UL.07.03	(3G0,75)C	8,0	44	79
CF78.UL.07.04	(4G0,75)C	8,5	52	99
CF78.UL.07.05	(5G0,75)C	9,5	64	108
CF78.UL.07.07	(7G0,75)C	10,5	87	146
CF78.UL.07.12	(12G0,75)C	13,5	145	252
CF78.UL.07.18	(18G0,75)C	15,5	207	367
CF78.UL.07.36	(36G0,75)C	22,0	416	728
CF78.UL.07.42	(42G0,75)C	24,5	489	800
CF78.UL.10.03	(3G1,0)C	8,5	53	90
CF78.UL.10.04	(4G1,0)C	9,0	65	107
CF78.UL.10.05	(5G1,0)C	9,5	78	124
CF78.UL.10.07	(7G1,0)C	11,0	110	170
CF78.UL.10.12	(12G1,0)C	14,5	178	307
CF78.UL.10.18	(18G1,0)C	17,0	256	424
CF78.UL.10.25	(25G1,0)C	20,0	347	567
CF78.UL.15.03	(3G1,5)C	9,5	72	133
CF78.UL.15.04	(4G1,5)C	10,0	90	139
CF78.UL.15.05	(5G1,5)C	10,5	115	166
CF78.UL.15.07	(7G1,5)C	12,5	153	226
CF78.UL.15.12	(12G1,5)C	16,0	249	403
CF78.UL.15.18	(18G1,5)C	19,0	368	564
CF78.UL.15.25	(25G1,5)C	22,5	495	755
CF78.UL.15.36	(36G1,5)C	26,5	715	1147
CF78.UL.15.42	(42G1,5)C	29,5	884	1360
CF78.UL.25.04	(4G2,5)C	11,5	148	212
CF78.UL.25.05	(5G2,5)C	12,5	177	247
CF78.UL.25.07	(7G2,5)C	14,5	245	350
CF78.UL.25.12	(12G2,5)C	19,0	407	610
CF78.UL.40.04	(4G4,0)C	14,0	217	342

*** *G ⇒ Cable contains a greenyellow core.*
**** *External diameters are maximum values and may tend toward lower tolerance limits.*

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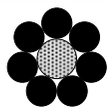
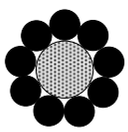
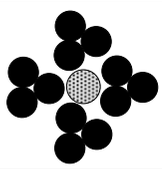
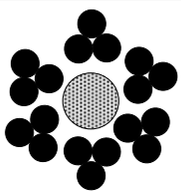
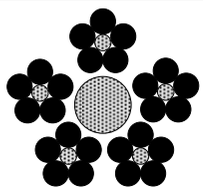
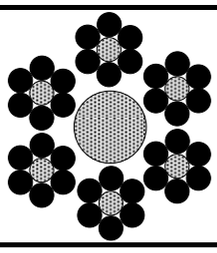
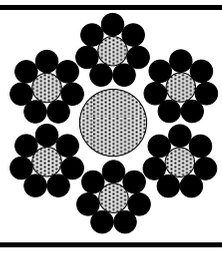
Image exemplary

Electrical values:

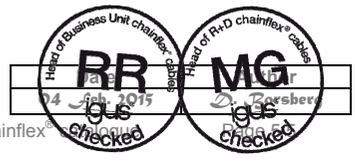
Nominal cross section [mm²]	Conductor resistance [approx. Ω / km] at 20 °C	Max. current rating [A] at 30 °C♦
(following)	DIN IEC 60344	DIN VDE 0298-4
0,5	39	10
0,75	26	14
1,0	19,5	17
1,5	13,3	21
2,5	8	30
4,0	4,45	41

♦ *The max. current rating depends on factors such as the individual environmental conditions and the type of installation.*

Construction table:

Part no. / No. of cores	Core stranding	Part no. / No. of cores	Core stranding
CF78.UL.XX.03 / 3		CF78.UL.XX.04 / 4	
CF78.UL.XX.05 / 5		CF78.UL.XX.07 / 7	
CF78.UL.XX.09 / 9		CF78.UL.XX.12 / 4x3	
CF78.UL.XX.18 / 6x3		CF78.UL.XX.25 / 5x5	
CF78.UL.XX.36 / 6x6		CF78.UL.XX.42 / 6x7	

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