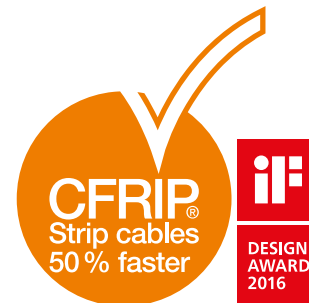


## TPE Control cable | CF9

- For maximum mechanical load requirements
- TPE outer jacket
- Oil-resistant
- Bio-oil-resistant
- PVC-free/halogen-free
- Low-temperature-flexibility
- Hydrolysis/microbe-resistant



## Dynamic Information

|  |                 |                                                                                                   |                                       |
|--|-----------------|---------------------------------------------------------------------------------------------------|---------------------------------------|
|  | Bend radius     | E-Chain®                                                                                          | min. 5 x d                            |
|  |                 | flexible                                                                                          | min. 4 x d                            |
|  |                 | fixed                                                                                             | min. 3 x d                            |
|  | Temperature     | E-Chain®                                                                                          | -31 °F to +212 °F (-35 °C to +100 °C) |
|  |                 | flexible                                                                                          | -58 °F to +212 °F (-50 °C to +100 °C) |
|  |                 | fixed                                                                                             | -67 °F to +212 °F (-55 °C to +100 °C) |
|  | v max.          | unsupported                                                                                       | 32.81 ft/s (10 m/s)                   |
|  |                 | gliding                                                                                           | 19.69 ft/s (6 m/s)                    |
|  | a max.          |                                                                                                   | 328.1 ft/s² (100 m/s²)                |
|  | Travel distance | Unsupported travel distances and for gliding applications up to 1312 ft (400 m) and more, Class 6 |                                       |
|  | Torsion         | ± 90°, with 3.281 ft (1 m) cable length                                                           |                                       |

## Cable structure

|  |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Conductor              | Conductor consisting of bare copper wires (according to EN 60228).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|  | Conductor insulation   | Mechanically high-quality TPE mixture.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|  | Conductor construction | <b>No. of conductors &lt; 12:</b> Conductors cabled in a layer with short pitch length.<br><b>No. of conductors ≥ 12:</b> Conductors combined in bundles and cabled together around a high-tensile strength core, using short pitch lengths and specific pitch directions for a low-torsion cable structure.<br><b>24-20 AWG:</b> Color code in accordance with DIN 47100.<br><b>18-2 AWG:</b> Black with white numbers, one conductor green-yellow.<br><b>CF9-02-03-INI:</b> brown, blue, black<br><b>CF9-03-04-INI:</b> brown, blue, black, white<br><b>CF9-02-05-INI:</b> brown, blue, black, white, green-yellow<br><b>CF9-03-16-07-03-INI:</b><br><b>(22 AWG):</b> violet/red/gray/red-blue, green/gray-pink/white-green/white-yellow, white-gray/black/yellow-brown/brown-green, white/yellow/pink/gray-brown<br><b>(18 AWG):</b> blue/green-yellow/brown |
|  | Color code             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

|  |              |                                                                                                                                                                         |
|--|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Outer jacket | Low-adhesion mixture on the basis of TPE, especially abrasion-resistant and highly flexible, adapted to suit the requirements in E-Chains®. Color: Dark Blue (RAL 5011) |
|  | CFRIP®       | Strip cables 50% faster: The tear strip is in the outer jacket<br>Video ► <a href="http://www.igus.com/CFRIP">www.igus.com/CFRIP</a>                                    |

|                 |             |   |   |   |       |         |   |            |         |
|-----------------|-------------|---|---|---|-------|---------|---|------------|---------|
| Requirements    | low         | 1 | 2 | 3 | 4     | 5       | 6 | 7          | highest |
| Travel distance | unsupported | 1 | 2 | 3 | 4     | 5       | 6 | 1,312 ft + |         |
| Oil-resistance  | none        | 1 | 2 | 3 | 4     | highest |   |            |         |
| Torsion         | none        | 1 | 2 | 3 | ±180° |         |   |            |         |

## Class 7.6.4.2

## Electrical Information

|                          |                 |                                                                                                                                   |
|--------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------|
|                          | Nominal voltage | 300 V                                                                                                                             |
|                          | Testing voltage | 2000 V (following DIN EN 50396)                                                                                                   |
| Properties and approvals |                 |                                                                                                                                   |
|                          | UV resistance   | High                                                                                                                              |
|                          | Oil resistance  | Oil resistant (following DIN EN 60811-404), bio-oil resistant (following VDMA 24568 with Plantocut 8 S-MB tested by DEA), Class 4 |
|                          | Silicon-free    | Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)                                            |
|                          | Halogen-free    | Following EN 50267-2-1                                                                                                            |
|                          | EAC             | Certified according to no. TC RU C-DE.ME77.B.01254                                                                                |
|                          | Lead-free       | Following 2011/65/EC (RoHS-II)                                                                                                    |
|                          | Cleanroom       | According to ISO Class 1, material/cable tested by IPA according to ISO standard 14644-1                                          |
|                          | CE              | Following 2014/35/EG                                                                                                              |

## Guaranteed lifetime according to guarantee conditions (Page 22-25)

| Cycles*                   |               |               |                      |        | 5 million           | 7.5 million         | 10 million          |
|---------------------------|---------------|---------------|----------------------|--------|---------------------|---------------------|---------------------|
| Temperature, from/to [°F] | v max. [ft/s] | a max. [ft/²] | Travel distance [ft] |        | R min. [factor x d] | R min. [factor x d] | R min. [factor x d] |
|                           | unsupported   | gliding       |                      |        |                     |                     |                     |
| -31 / -13                 |               |               |                      |        | 6.8                 | 7.5                 | 8.5                 |
| -13 / +194                | 32.81         | 19.69         | 328.1                | > 1312 | 5                   | 6                   | 7                   |
| +194 / +212               |               |               |                      |        | 6.8                 | 7.5                 | 8.5                 |

\* Higher number of cycles possible - please ask for your individual calculation.

## Typical application areas

- For maximum mechanical load requirements
- Indoor and outdoor applications, UV-resistant
- Unsupported travel distances and for gliding applications up to 1312 ft (400 m) and more
- 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



Test data ► Page 58

1,244 types from stock ... no cutting costs\*  
... no minimum order quantity ... \*(up to 10 cuts of the same part number)

36 months guarantee on every chainflex® cable ...  
... up to 10 million cycles guaranteed ...

TPE Control cable | CF9

Strip cables 50 % faster



Image exemplary.

| Part No.                    | AWG | Number of conductors<br>and rated cross<br>section [mm²] | Outer diameter<br>max. |      | Copper index |       | Weight  |       |
|-----------------------------|-----|----------------------------------------------------------|------------------------|------|--------------|-------|---------|-------|
|                             |     |                                                          | in.                    | mm   | lbs/mft      | kg/km | lbs/mft | kg/km |
| CF9-02-02                   | 24  | 2 x 0.25                                                 | 0.18                   | 4.5  | 4.0          | 6     | 12.1    | 18    |
| CF9-02-03- <b>INI</b>       | 24  | 3 x 0.25                                                 | 0.18                   | 4.5  | 5.4          | 8     | 14.8    | 22    |
| CF9-02-06                   | 24  | 6 x 0.25                                                 | 0.22                   | 5.5  | 10.8         | 16    | 24.9    | 37    |
| CF9-02-07                   | 24  | 7 x 0.25                                                 | 0.26                   | 6.5  | 12.8         | 19    | 29.6    | 44    |
| CF9-02-08                   | 24  | 8 x 0.25                                                 | 0.26                   | 6.5  | 14.8         | 22    | 33.6    | 50    |
| CF9-02-12                   | 24  | 12 x 0.25                                                | 0.31                   | 8.0  | 21.5         | 32    | 49.1    | 73    |
| CF9-02-18 <sup>1)</sup>     | 24  | 18 x 0.25                                                | 0.37                   | 9.5  | 32.3         | 48    | 70.6    | 105   |
| CF9-02-20                   | 24  | 20 x 0.25                                                | 0.37                   | 9.5  | 35.6         | 53    | 74.6    | 111   |
| CF9-03-04- <b>INI</b>       | 22  | 4 x 0.34                                                 | 0.20                   | 5.0  | 10.1         | 15    | 21.5    | 32    |
| CF9-03-05- <b>INI</b>       | 22  | 5 x 0.34                                                 | 0.22                   | 5.5  | 12.1         | 18    | 25.5    | 38    |
| CF9-03-06                   | 22  | 6 x 0.34                                                 | 0.24                   | 6.0  | 14.8         | 22    | 30.2    | 45    |
| CF9-03-08                   | 22  | 8 x 0.34                                                 | 0.28                   | 7.0  | 19.5         | 29    | 39.6    | 59    |
| CF9-03-16-07-03- <b>INI</b> | 22  | 16 x 0.34                                                | 0.43                   | 11.0 | 55.1         | 82    | 106.8   | 159   |
|                             | 18  | 3 x 0.75                                                 |                        |      |              |       |         |       |
| CF9-05-02                   | 20  | 2 x 0.5                                                  | 0.20                   | 5.0  | 7.4          | 11    | 17.5    | 26    |
| CF9-05-03                   | 20  | 3 x 0.5                                                  | 0.20                   | 5.0  | 10.8         | 16    | 21.5    | 32    |
| CF9-05-04                   | 20  | 4 x 0.5                                                  | 0.22                   | 5.5  | 14.8         | 22    | 26.9    | 40    |
| CF9-05-05                   | 20  | 5 x 0.5                                                  | 0.24                   | 6.0  | 18.1         | 27    | 32.3    | 48    |
| CF9-05-07                   | 20  | 7 x 0.5                                                  | 0.28                   | 7.0  | 24.9         | 37    | 44.3    | 66    |
| CF9-05-12                   | 20  | 12 x 0.5                                                 | 0.39                   | 10.0 | 43.0         | 64    | 80.6    | 120   |
| CF9-05-18                   | 20  | 18 x 0.5                                                 | 0.45                   | 11.5 | 64.5         | 96    | 118.9   | 177   |
| CF9-05-25                   | 20  | 25 x 0.5                                                 | 0.51                   | 13.0 | 88.7         | 132   | 158.6   | 236   |
| CF9-05-36                   | 20  | 36 x 0.5                                                 | 0.61                   | 15.5 | 128.3        | 191   | 224.4   | 334   |
| CF9-07-04 <sup>1)</sup>     | 18  | 4 G 0.75                                                 | 0.24                   | 6.0  | 21.5         | 32    | 37.0    | 55    |
| CF9-07-05                   | 18  | 5 G 0.75                                                 | 0.26                   | 6.5  | 26.9         | 40    | 45.7    | 68    |
| CF9-07-07                   | 18  | 7 G 0.75                                                 | 0.31                   | 8.0  | 37.6         | 56    | 63.2    | 94    |
| CF9-07-12                   | 18  | 12 G 0.75                                                | 0.43                   | 11.0 | 64.5         | 96    | 114.2   | 170   |
| CF9-07-20                   | 18  | 20 G 0.75                                                | 0.53                   | 13.5 | 106.8        | 159   | 179.4   | 267   |
| CF9-07-25                   | 18  | 25 G 0.75                                                | 0.57                   | 14.5 | 133.0        | 198   | 221.1   | 329   |
| CF9-10-03                   | 17  | 3 G 1.0                                                  | 0.24                   | 6.0  | 21.5         | 32    | 36.3    | 54    |
| CF9-10-04                   | 17  | 4 G 1.0                                                  | 0.26                   | 6.5  | 28.9         | 43    | 46.4    | 69    |
| CF9-10-05                   | 17  | 5 G 1.0                                                  | 0.30                   | 7.5  | 35.6         | 53    | 56.4    | 84    |
| CF9-10-12                   | 17  | 12 G 1.0                                                 | 0.47                   | 12.0 | 85.3         | 127   | 143.8   | 214   |
| CF9-10-18                   | 17  | 18 G 1.0                                                 | 0.57                   | 14.5 | 128.3        | 191   | 211.0   | 314   |
| CF9-10-25                   | 17  | 25 G 1.0                                                 | 0.67                   | 17.0 | 177.4        | 264   | 302.4   | 450   |

<sup>1)</sup> Delivery time upon request

**Note:** The mentioned outer diameters are maximum values.  
G = with green-yellow earth core x = without earth core

Class 7.6.4.2

Requirements  
Travel distance  
Oil-resistance  
Torsion

|             |   |   |   |       |         |   |            |         |
|-------------|---|---|---|-------|---------|---|------------|---------|
| low         | 1 | 2 | 3 | 4     | 5       | 6 | 7          | highest |
| unsupported | 1 | 2 | 3 | 4     | 5       | 6 | 1,312 ft + |         |
| none        | 1 | 2 | 3 | 4     | highest |   |            |         |
| none        | 1 | 2 | 3 | ±180° |         |   |            |         |

| Part No.                 | AWG | Number of conductors<br>and rated cross<br>section [mm²] | Outer diameter<br>max. |      | Copper index |       | Weight  |       |
|--------------------------|-----|----------------------------------------------------------|------------------------|------|--------------|-------|---------|-------|
|                          |     |                                                          | in.                    | mm   | lbs/mft      | kg/km | lbs/mft | kg/km |
| CF9-15-02                | 16  | 2 x 1.5                                                  | 0.26                   | 6.5  | 21.5         | 32    | 40.3    | 60    |
| CF9-15-04                | 16  | 4 G 1.5                                                  | 0.30                   | 7.5  | 43.0         | 64    | 60.5    | 90    |
| CF9-15-05                | 16  | 5 G 1.5                                                  | 0.31                   | 8.0  | 54.4         | 81    | 73.9    | 110   |
| CF9-15-07 <sup>17)</sup> | 16  | 7 G 1.5                                                  | 0.37                   | 9.5  | 76.6         | 114   | 101.5   | 151   |
| CF9-15-12                | 16  | 12 G 1.5                                                 | 0.53                   | 13.5 | 128.3        | 191   | 194.9   | 290   |
| CF9-15-18                | 16  | 18 G 1.5                                                 | 0.65                   | 16.5 | 192.2        | 286   | 277.5   | 413   |
| CF9-15-25                | 16  | 25 G 1.5                                                 | 0.79                   | 20.0 | 266.1        | 396   | 424.7   | 632   |
| CF9-15-36                | 16  | 36 G 1.5                                                 | 0.93                   | 23.5 | 383.7        | 571   | 563.8   | 839   |
| CF9-25-04                | 14  | 4 G 2.5                                                  | 0.35                   | 9.0  | 71.2         | 106   | 102.1   | 152   |
| CF9-25-05                | 14  | 5 G 2.5                                                  | 0.39                   | 10.0 | 88.7         | 132   | 132.4   | 197   |
| CF9-25-07 <sup>17)</sup> | 14  | 7 G 2.5                                                  | 0.47                   | 12.0 | 125.7        | 187   | 164.6   | 245   |
| CF9-25-12                | 14  | 12 G 2.5                                                 | 0.69                   | 17.5 | 213.0        | 317   | 346.1   | 515   |
| CF9-25-16                | 14  | 16 G 2.5                                                 | 0.77                   | 19.5 | 284.2        | 423   | 461.6   | 687   |
| CF9-25-18 <sup>7)</sup>  | 14  | 18 G 2.5                                                 | 0.91                   | 23.0 | 319.9        | 476   | 557.7   | 830   |
| CF9-25-25                | 14  | 25 G 2.5                                                 | 0.96                   | 24.5 | 443.5        | 660   | 711.6   | 1059  |
| CF9-40-04                | 12  | 4 G 4.0                                                  | 0.41                   | 10.5 | 114.2        | 170   | 153.9   | 229   |
| CF9-60-04                | 10  | 4 G 6.0                                                  | 0.49                   | 12.5 | 170.7        | 254   | 223.1   | 332   |
| CF9-60-05                | 10  | 5 G 6.0                                                  | 0.53                   | 13.5 | 213.0        | 317   | 275.5   | 410   |
| CF9-100-04               | 8   | 4 G 10.0                                                 | 0.65                   | 16.5 | 284.2        | 423   | 389.7   | 580   |
| CF9-160-04               | 6   | 4 G 16.0                                                 | 0.71                   | 18.0 | 354.8        | 528   | 483.1   | 719   |
| CF9-350-04               | 2   | 4 G 35.0                                                 | 1.10                   | 28.0 | 993.8        | 1479  | 1188.7  | 1769  |

<sup>7)</sup> Nominal voltage 600/1000 V <sup>9)</sup> Nominal voltage 450/750 V

<sup>17)</sup> Using the cables with "7 G 1.5 mm²" and "7 G 2.5 mm²" it is essential: bending radius 17 x d with travel distance ≥ 5 m.  
When the travel distance is not less than 5 m, a bending radius not less than 17 x d has to be used.

**Note:** The mentioned outer diameters are maximum values.  
G = with green-yellow earth core x = without earth core



Order example: **CF9-25-04** – In your desired length  
**CF9** Chainflex® series **-25** Code nominal cross section **-04** Number of conductors



Online order: [www.chainflex.com/CF9](http://www.chainflex.com/CF9)



Delivery time 24hr or today.  
Delivery time means time until shipping of goods.



Configurators ► [www.igus.com/CF9](http://www.igus.com/CF9)

