

# Hybrid cable | PUR | chainflex® CFROBOT9

- For torsion applications
- PUR outer jacket
- Unshielded/shielded
- Oil and coolant-resistant
- Flame retardant
- PVC and halogen-free
- Notch-resistant
- Hydrolysis and microbe-resistant

### Dynamic information

	<b>Bend radius</b>	<b>e-chain® twisted</b>	minimum 10 x d
		<b>flexible</b>	minimum 8 x d
		<b>fixed</b>	minimum 5 x d
	<b>Temperature</b>	<b>e-chain® twisted</b>	-25 °C to +80 °C
		<b>flexible</b>	-40 °C to +80 °C (following DIN EN 60811-504)
		<b>fixed</b>	-50 °C to +80 °C (following DIN EN 50305)
	<b>v max.</b>	<b>twisted</b>	180 %/s
		<b>a max.</b>	60 %/s²
	<b>Travel distance</b>	Robots and multi-axis movements, Class 1	
	<b>Torsion</b>	± 180°, with 1 m cable length, Class 3	

### Cable structure

	<b>Conductor</b>	Stranded conductor in especially bending-resistant design consisting of bare copper wires (following DIN EN 60228).
	<b>Core insulation</b>	Mechanically high-quality TPE mixture.
	<b>Core identification</b>	► Product range table
	<b>Element shield</b>	Extremely torsion-resistant tinned braided copper shield. Bedeckung optisch ca. 85 %
	<b>Outer jacket</b>	Low-adhesion, highly abrasion-resistant PUR mixture, adapted to suit the requirements in e-chains® (following DIN EN 50363-10-2). Colour: Steel-blue (similar to RAL 5011)

### Electrical information

	<b>Nominal voltage</b>	300/500 V (following DIN VDE 0298-3)
	<b>Testing voltage</b>	2000 V (following DIN EN 50395)

### Properties and approvals

	<b>UV resistance</b>	High.
	<b>Oil resistance</b>	Oil-resistant (following DIN EN 50363-10-2), Class 3.
	<b>Flame retardant</b>	According to IEC 60332-1-2, CEI 20-35, FT1, VW-1

Example image

Basic requirements	low	1	2	3	4	5	6	7	highest
Travel distance	unsupported	1	2	3	4	5	6	7	> 400 m
Oil resistance	none	1	2	3	4	5	6	7	highest
Torsion	none	1	2	3	4	5	6	7	±180°

## Class 6.1.3.3

- Silicone-free** Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992).
- Halogen-free** Following DIN EN 60754.
- UL/CSA** **Cores ≤ 0,5 mm²:** Style 10467 and 20317, 300 V, 80 °C  
**Cores > 0,5 mm²:** Style 10493 and 20317, 300 V, 80 °C  
Following NFPA 79-2012 chapter 12.9.
- NFPA**
- EAC** Certificate no. RU C-DE.ME77.B.01254 (TR SU)
- CTP** Certificate no. C-DE.PB49.B.00416 (Fire safety)
- CEI** Following CEI 20-35.
- Lead-free** Following 2011/65/EU (RoHS-II).
- Cleanroom** According to ISO Class 1. Outer jacket material complies with CF27.07.05.02.01.D, tested by IPA according to standard 14644-1.  
Following 2014/35/EU.
- CE**

### Guaranteed lifetime according to guarantee conditions (Page 22-23)

Cycles*	5 million		7.5 million		10 million	
	Temperature, from/to [°C]	Torsion max. [°/m]	Torsion max. [°/m]	Torsion max. [°/m]	Torsion max. [°/m]	Torsion max. [°/m]
	-25/-15	±150	±90	±120	±60	±30
	-15/+70	±180	±120	±90	±60	±30
	+70/+80	±150	±90			

\* Higher number of cycles? Online lifetime calculation: [www.igus.eu/chainflexlife](http://www.igus.eu/chainflexlife)

### Typical mechanical application areas

- For extremely heavy duty applications with torsional movements
- Almost unlimited resistance to oil
- Indoor and outdoor applications, UV resistant
- Especially for robots and multi-axis movements
- Robots, Handling, spindle drives



igus® chainflex® cables in triflex® R e-chain® for 6-axis robots



igus chainflex



igus® chainflex® CFROBOT9



Example image

Part No.	Number of cores and conductor nominal cross section [mm²]	Outer diameter (d) max. [mm]	Copper index [kg/km]	Weight [kg/km]	Part No.	Core group	Colour code
CFROBOT9.001	5G1.0+(2x1.0)C	10.5	86	142	CFROBOT9.001	5G1.0 (2x1.0)C	white with black numbers 1-4, one core green-yellow
CFROBOT9.002 <sup>11)</sup>	2x3x0.75+(3x0.75)C	11.5	82	145	CFROBOT9.002 <sup>11)</sup>	2x3x0.75 (3x0.75)C	white with black numbers 4-9 white with black numbers 1-3
CFROBOT9.003 <sup>11)</sup>	2x0.5+(2x0.5)C	10.0	29	80	CFROBOT9.003 <sup>11)</sup>	2x0.5 (2x0.5)C	blue/black white/brown
CFROBOT9.004	16G1.0+(2x1.0)C	16.0	207	324	CFROBOT9.004	16G1.0 (2x1.0)C	white with black numbers 1-4, 7-17, one core green-yellow white with black numbers 5-6
CFROBOT9.005	23G1.0+(2x1.0)C	19.5	286	462	CFROBOT9.005	23G1.0 (2x1.0)C	white with black numbers 1-4, 7-24, one core green-yellow white with black numbers 5-6
CFROBOT9.006	24G1.0+(2x1.0)C	20.0	299	476	CFROBOT9.006	24G1.0 (2x1.0)C	white with black numbers 1-4, 7-25, one core green-yellow white with black numbers 5-6
CFROBOT9.007	(15x(2x0.25)C)+(4x0.25)C	18.5	245	384	CFROBOT9.007	15x(2x0.25)C (4x0.25)C	Colour code in accordance with DIN 47100. white/green/brown/yellow(CAN-Bus)
CFROBOT9.010	(4x(2x0.25)C)C	10.5	66	120	CFROBOT9.010	4x(2x0.25)C)C	white/brown, green/yellow, grey/pink, blue/red

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

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



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