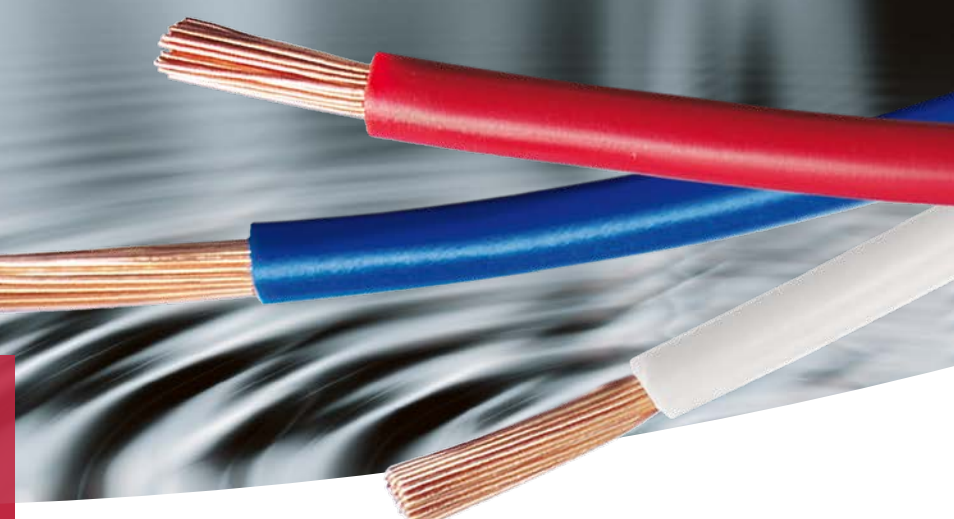# Copper Clad Steel – FLCCSRY

Innovative conductor material for low current and signal cables

Material
Copper Clad Steel consists of a core of homogeneous steel surrounded by a continuous cladding of copper

Applicable material standard
ASTM B 227, ASTM B 228, ASTM B 452

Usage in automotive industry
Coaxial cables, low current and signal cables

Usage in industry
Telecommunication, utility grounding, military and electronics

Benefits of Copper Clad Steel

	CCS	Cu-ETP
density (at 20 °C)	8.24 g/cm^3	8.92 g/cm^3
electrical conductivity	40 %, IACS	100 %, IACS
tensile strength*	> 770 N/mm^2	> 220 N/mm^2
elongation at break*	> 1 %	> 16 %

* Values based on soft annealed ETP-copper and hard-drawn CCS.

Bending Test
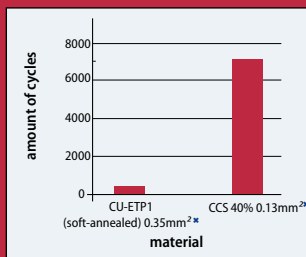
Compared to copper conductors	Compared to steel conductors
✔ higher mechanical strength due to steel core ✔ reduction of cross-section of up to three gauge sizes due to higher tensile strength of CCS i.e. 0.35 mm^2 ➔ 0.13 mm^2 ✔ smaller package size ✔ similar crimping characteristics	✔ better corrosion resistance than steel due to copper surface ✔ lower resistance due to high conductivity of copper covering

Comparison table – cable types*

	FLCCSRY	FLRY	Ratio
cross-section	0.13 mm^2	0.35 mm^2	63 % reduction
tensile force	>130 N	>75 N	73 % increase
max. electrical resistance at 20 °C	317 Ω/km**	54.4 Ω/km**	482 % increase **
outer diameter	1.05 mm	1.30 mm	20 % reduction
approx. cable weight	2.0 kg/km	4.5 kg/km	55 % reduction

* Due to the mechanical benefits over copper 0.35 mm² the adequate CCS cross-section is 0.13 mm².
** Due to resistance increase CCS can only be used in low current or signal applications.

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