

# Identification of insulated wires by colours according to DIN 40 705 and CEI/IEC 60446

## Core identification

The core identification of different conductors such as **Phase conductor**, **Mid-point conductor**, **PEN-conductor** and **Protective conductor** are distinguished by the indicating letters and colours of the core.

An universal international norm exists only for the green-yellow earthing (grounding) conductor.

For new installation it is not allowed to use the old core colours.

Conductor designation	Alphanumerical type		Colour identification		Symbol
Alternating current	old	new	old	new	
Phase conductor 1	R	L1	black	not defined (preferred colour black <sup>1)</sup> )	
Phase conductor 2	S	L2	red	not defined (e.g. brown <sup>1)</sup> )	
Phase conductor 3	T	L3	blue	not defined	
Mid-point conductor	MP	N	grey	light blue <sup>2)</sup>	
Direct current					
Positive	L +	+		not defined	
Negative	L -	-		not defined	
Mid-point conductor	M			light blue <sup>2)</sup>	
Protective conductor		PE		green-yellow <sup>3)</sup>	
Neutral conductor with protection		PEN		green-yellow <sup>3)</sup>	
Earth (ground)		E		not defined	
Earth for external voltage		TE		not defined	
Load-Connecting clamps		to L1 to L2 to L3 to N			U V W N

### <sup>1)</sup> Application of conductors by colours "black" or "brown" for internal wiring of single core cables

For the internal wiring of apparatus, distributor boards and equipment with the insulated single cores, only the "black"-colour is preferred. Application of other colours or combinations of two other colours are also provided, if these for the purpose of manufacturing or services are necessary.

If only an additional colour for the individual identification of separated conductor group is necessary, the colour "brown" is preferred.

### <sup>2)</sup> Application of the colour "light blue"

Where a circuit includes a neutral or mid-point conductor identified by colour, the colour used for this purpose shall be blue. In order to avoid confusion with other colours it is recommended to use an unsaturated colour blue, called here "light blue". Light blue shall not be used for identifying any other conductor where confusion is possible.

In the absence of a neutral or mid-point conductor, a conductor identified by light blue within the whole wiring system may also be used for any other purposes, except as a protective conductor.

If identification by colour is used, bare conductors used as neutral or mid-wire conductors shall be either coloured by a light blue stripe, 15 mm to 100 mm wide in each unit or enclosure and each accessible position, or coloured light blue throughout their length.

### <sup>3)</sup> Application of bi-colour combination "green-yellow"

The bi-colour combination green-and-yellow shall be used for identifying the protective conductor and for no other purposes.

Green-and-yellow is the only colour combination recognised for identifying the protective conductor, according to DIN VDE 0293. The combination of the colours green-and-yellow shall be such that, on any 15 mm length of the conductor where colour coding is applied, one of these colours cover at least 30% and not more than 70% of the surface of the conductor, the other colour covering the remainder of that surface.

If bare conductors, used as protective conductors, are provided with colouring they shall be coloured green-and-yellow, either throughout the whole length of each conductor or in each compartment or unit or at each accessible position. If adhesive tape is used, only bi-coloured tape shall be applied.