



Proposal to amend core colours of SANS 1507-2: Wiring Cables

**Proposal:**

Add note (a) to Table 1 of SANS 1507-2.

**Table 1 - Core identification**

| 1                     | 2  | 3                                   | 4   | 5   |
|-----------------------|--|-------------------------------------|---|---|
| Number of phase cores | Colour(s) of phase cores <sup>a</sup>  | Colour of neutral core (if present) | Colour of earthing core (if present and not bare) | Colour of special purpose core (if present) |
| 1                     | Any, except green  | -                                   | -   | -   |
| 1                     | Red  | Black                               | Green/yellow                                      | Orange                                      |
| 2                     | Red and yellow   | Black                               | Green/yellow                                      | Orange                                      |
| 3                     | Red, yellow and blue   | Black                               | Green/yellow                                      | Orange                                      |
| 4 or more             | Any base colour except green and orange, with serial numbers (numerals or words) | Numbered as for phase cores         | Green/yellow                                      | Orange                                      |

<sup>a</sup> ***The phase core colours contained in this table are the preferred colours. Alternative phase colour combinations are allowed in order to cater for wiring circuits which require additional phase core colour combination in multicore cables. Any base colour may be used, except green and orange.***

**Background**

The SANS 1507-2 standard stipulates the following in terms of Core Identification:

**Clause 4.2.3.1 Identification**

*Cores shall be identified durably and distinctly by colouring as specified in table 1.*

Table 1 specifies the phase colours as follows:

1 phase core: Any colour except Green (e.g. housewire)

1 phase core + N: Red (N – Black) (e.g. 2 core surface wiring cables)

2 phase core: Red and Yellow

3 phase core: Red, Yellow, Blue

4 phase core or more: Any base colour except Green and Orange and with serial numbers

The phase core colours may be accompanied in a cable by a Neutral core (Black), an Earthing core (G/Y if not bare) and a Special Purpose core (Orange).

The below core configurations have set colour combinations and are therefore restrictive. This leads to unintended consequences in wiring of premises, which are not applicable to single core cables (housewire) or multicore cables with 4 phase cores.

1 phase core (+ Neutral),

2 phase cores and

3 phase cores

These consequences include the following:

- The use of black cores as phase cores where 2 core cables are used, specifically surface wiring cables such as multicore flat and circular sheathed cables (300/500V) and circular sheathed multicore cables with bare earth continuity conductors and aluminium/PVC laminate (300/500V). This is particularly an issue in lighting circuits. (Refer Attachment A). The use of black cores as phase cores is strictly prohibited by SANS 10142-1 Wiring of Premises.

Clause 6.3.3.2 from SANS 10142-1 is relevant:

*The means of identification for an a.c. circuit may be by colours or by numbers, as follows:*

*a) where colours are used*

*1) a neutral conductor shall be identified by black only,*

*2) an earth continuity conductor shall be identified by the bi-colour green/yellow only, or bare. Green/yellow shall NOT be used as live conductors under any circumstances,*

*3) a phase conductor shall be identified by a colour other than green/yellow, green or black, and*

*4) the colours may be applied at the ends of the conductor (of a multicore cable) by means of durable colour marking (e.g. insulating sleeves or by electrical insulating tape wound more than once around the conductor).*

- In cases where more than one phase of a three phase supply are used in wiring of a premises, the available colour combinations do not allow for the identification of the individual phases by colour when multicore cables are used.
- Individual circuits cannot be identified and traced by the colour of the phase cores using the available colour combinations in multicore cables.

Attachment A illustrates by example the wiring of a light circuit using T&E/Surfix

### ATTACHMENT A: Wiring of a light circuit using T&E/Surfix

#### Wiring of a light circuit using T&E / Surfix. T McD 21.07.2016.

As can be seen, the colours for sw 1 & 2 are incorrect and need to be identified with coloured tape at the terminations. Sw 3 is a 4 lever and a five core cable has been used with different colours. A 4 core has been used as well, with similar colours. A further complication results when one has to connect one colour to another as can be seen at terminal 4 / 5. This is a simple circuit. If single core conductors were used, one could match the colours.

