CORRECTION FACTORS (CA, CG AND MORE)

WHY DOES A CABLE IN A HOT LOFT CARRY LESS CURRENT?

A simple shower example has **no correction factors**. In real installations, the environment around a cable can reduce how much current it can safely carry, so we **correct** for it and usually end up with a bigger cable.

$$It \geq In \div (Ca \times Cg \times Ci \times Cc \times Cf \ldots)$$

Only multiply in the factors that **apply** to the question, then pick a cable whose tabulated rating **It** is at least that figure. Its capacity as installed is **Iz = It × Ca × Cg × …**, which is then at least In.

FACTOR	WHAT IT CORRECTS FOR	WHERE TO FIND IT
Ca	**Ambient temperature** around the *cable* (not the room). Tables are based on 30 °C air, where the factor is 1. Buried cables use a 20 °C ground temperature instead.	OSG Table F1 · BS 7671 Table 4B1
Cg	**Grouping**: several circuits run bunched together along the same route	OSG Table F3 · BS 7671 Table 4C1
Ci	**Thermal insulation** around the cable	OSG · BS 7671
Cc	Cable **buried in the ground** (in a duct or direct): factor **0.9**	BS 7671 only
Cf	Circuit protected by a **BS 3036 rewireable fuse**: factor **0.725**	BS 7671 only

In exam questions you'll be **given** the temperature and the number of grouped circuits. You don't measure them. In the exam you mainly need **Ca, Cg and Ci**.

- **On-Site Guide** · Appendix F · Table F1 ambient temperature factors (Ca) · **p.184**
- **On-Site Guide** · Table F3 grouping factors (Cg) · **p.186**
- **On-Site Guide** · It ≥ In ÷ factors formula and some factors · **p.183**
- **BS 7671** · Appendix 4 · list of symbols Ca, Cg, Ci, Cc, Cf (incl. Cf 0.725 and Cc 0.9) · **p.452**

HIGHLIGHT CF AND CC

- **BS 7671** · Table 4B1 ambient temperature factors · **p.469**
- **BS 7671** · Table 4C1 grouping factors · **p.471**

Reading Table 4C1

Choose the **arrangement** row. The shower cable isn't on a ladder, a tray, or a single layer on a wall or floor, so it's **"bunched in air, on a surface, embedded or enclosed"**. Then read across to the **number of circuits**. "Grouped with two other circuits" means **3 circuits in total**.

Free section from Sparky Study Notes. The full Level 3 notes, 1,463 practice questions and the video lessons: sparkystudynotes.co.uk