CABLE CALCULATION, STEP 4: DIVERSITY

DOES A COOKER REALLY DRAW 41.7 AMPS?

41.7 A assumes **everything** is on full at once, and nobody cooks like that. You turn the hob down once the pan boils. The oven sits at 180–220 °C, not flat out. And **thermostats** in the oven and hob keep clicking the elements off and on. So we can apply **diversity**.

> **Diversity is guidance, not a regulation**You don't **have** to apply it. It's common-sense guidance, found only in the **On-Site Guide** (a *guide*). It's worth reading OSG Appendix A: maximum demand and diversity is a very subjective area.

On-Site Guide · Appendix A · maximum demand and diversity · **p.149**

On-Site Guide · Table A1 · current demand to be assumed (incl. household cooking appliances) · **p.150**

On-Site Guide · Table A2 · diversity by type of premises · **pp.151–152**

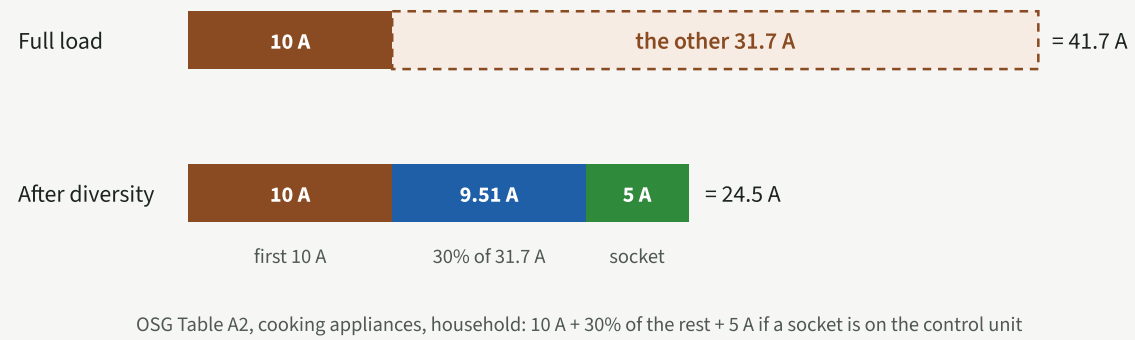
COOKING APPLIANCES ROW, "INDIVIDUAL HOUSEHOLD" COLUMN

Table A2's wording is famously clumsy: *10 A + 30% of the full load of connected cooking appliances in excess of 10 A + 5 A if a socket-outlet is incorporated in the control unit.* Table A1 says it more clearly: the first 10 A, plus 30% of the rest, plus 5 A for a socket. (Lighting is easier: 66% in a household. Cookers are the most complicated diversity sum.)

WORKING: IB AFTER DIVERSITY

```
Ib (full load)                  = 41.7 A
1) Take off the first 10 A:     41.7 - 10     = 31.7 A
2) 30% of the remainder:        31.7 × 0.3    = 9.51 A
3) Put the 10 A back:           9.51 + 10     = 19.51 A
4) Add 5 A for the socket:      19.51 + 5     = 24.51 A

New Ib (after diversity) = 24.5 A   (almost half!)
```



OSG Table A2, cooking appliances, household: 10 A + 30% of the rest + 5 A if a socket is on the control unit

The cooker diversity sum, to scale.

A smaller Ib saves **time, effort and money**: smaller cable is cheaper and easier to work with. But it's still your judgement. In an HMO, several tenants might cook at once. A family of five with a keen cake baker might have the oven on all day. **Speak to the client.** You could work it out with and without diversity and go somewhere in the middle. We work it both ways so you can see the difference (see section 14).

> **Don't round up as you go**
> Keep the number the calculator gives. Rounding 24.5 A up to 25 A, for example, could tip you into a bigger cable than you need. (The working above starts from 41.7 A; the full 41.74 A gives 24.52 A, the same 24.5 A.)

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