CURRENT-CARRYING CAPACITY

HOW DO YOU READ APPENDIX 4?

EXTERNAL INFLUENCES: 522 AND APPENDIX 5

Section **522** is the selection of wiring systems for the external influences they'll face. It gives the codes and examples; **Appendix 5** gives the detail.

CODE	INFLUENCE	NOTES
AA	Ambient temperature	Leads to the C_a factor
AE	Presence of **solid foreign bodies**	Expressed as **IP ratings** — dust, fingers, tools
AG	**Impact** / mechanical stress	AG1 low (household) · AG2 medium (industrial)
AH	Vibration	
AK	Presence of flora / mould	
BA	Capability of persons	BA1 ordinary · BA2 children · BA4 instructed · BA5 skilled

↔ **Which book, which question.** Asked what a **code means** (what is AG2?) → **Appendix 5**. Asked what influences you must **consider** for a wiring system → **522**. The two interlock, and that's deliberate.

The AE row is a neat example of the book joining up: "presence of solid foreign bodies" is expressed as **IP ratings** — the same IP2X and IP4X from Section 416 earlier, arriving from a completely different direction.

522 · selection for external influences

Appendix 5 · classification codes in detail

CURRENT-CARRYING CAPACITY AND APPENDIX 4

Section **523** covers current-carrying capacity, and sends you to Appendix 4 for the numbers.

CABLE	MAX OPERATING TEMPERATURE
Thermoplastic (PVC) — standard grey twin & earth	70 °C
Thermosetting	90 °C

523 also explains why the **neutral counts as a live conductor**: it carries current in normal service, so it has to be allowed for. Harmonics are the case where the neutral current can exceed the line current.

FINDING YOUR WAY ROUND APPENDIX 4

≡ **Tables ending in A** = current-carrying capacity. **Tables ending in B** = voltage drop. The exception is **Table 4D5** — flat twin & earth — which gives **both in one table**.

Also check whether you're on **copper or aluminium** conductors, and match the installation reference method.

```
10 MM² TWIN & EARTH, COPPER, REFERENCE METHOD C
Appendix 4 → Table 4D5
"70 °C thermoplastic sheathed and insulated
 flat cable with protective conductor" = twin & earth

10 mm² row, reference method C column
It = 64 A
```

Volt drop, from the same appendix:

$$\text{Volt drop} = (\text{mV/A/m} \times I_b \times \text{L}) \div 1000$$

Correction factors live here too.
For a cable up to 10 mm² surrounded by thermal insulation, Appendix 4 section 2.6 (p.451) gives C_i by length: 50 mm 0.88, 100 mm 0.78, **200 mm 0.63**, 400 mm 0.51, and **0.5** for 0.5 m or more — in the notes ahead of the tables, not in the tables themselves. Anything to do with cable rating factors, current capacity or volt drop is **Appendix 4**.

- **523** · current-carrying capacity
- **Table 52.2** · maximum operating temperatures
- **Appendix 4** · It values, volt drop, correction factors
- **Table 4D5** · flat twin & earth

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