THE 80 % RULE AND THE ON-SITE GUIDE

WHY MULTIPLY THE TABLE VALUE BY 0.8?

The values in BS 7671 are for a circuit **in use** — a cable at its operating temperature of **70 °C**. Current through copper makes it hot, and hot copper has **more resistance**. So a circuit that's been running has a higher Zs than the same circuit stone cold.

% When you test a **brand new, unenergised** circuit, it's cold. Its measured Zs should therefore be **no more than 80 % of the tabulated value**, leaving 20 % of headroom for the warming-up it will do in service.

DEVICE	BS 7671 TABULATED (100 %)	MAX MEASURED (80 %)
Type B 50 A	0.87 Ω	**0.70 Ω** (0.87 × 0.8)
Type B 16 A	2.73 Ω	**2.19 Ω** (On-Site Guide, Table B6)

You don't have to do the sum.
The **On-Site Guide** already prints the 80 % figures — Appendix B, **Table B6** for circuit breakers. Look up type B, 16 A and it gives **2.19 Ω** directly (2.73 × 0.8 on the rounded table figure comes to 2.18). That's the number you're checking against with your tester in your hand.

! **Which book, which number.**
BS 7671 tables = **maximum permitted** Zs, circuit in use, 100 %.
On-Site Guide tables = **maximum measured** Zs, new circuit, 80 %.

SPOTTING WHICH ONE A QUESTION WANTS

The book uses several phrasings and they are not interchangeable:

WORDING IN THE QUESTION	USE
maximum **tabulated** / **permitted** / **allowed** / **acceptable**	The BS 7671 value, 100 %
maximum **measured**	The 80 % value — multiply by 0.8

Worked example: *"A 32 A BS EN 60898 type C circuit breaker… what is the maximum acceptable **measured** Zs?"* → Table 41.3 gives 0.68 Ω → the word "measured" means **multiply by 0.8**, or read the type C, 32 A figure from OSG

Table B6. The wrong answer 0.68 is sitting right there in the options for anyone who missed the word "measured".

On-Site Guide · Appendix B · Table B6 · 80 % Zs for circuit breakers

Table 41.3 · 100 % tabulated values

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