Fuse Selection Guide

Not all fuses are created equal, but all are affected by overload current and their length of time in operation. No fuse lasts forever. Even a perfect electrical system that never overloads will eventually wear out a fuse.



Selection Factors

- 1. Normal operating current
- 2. Application voltage (AC or DC)
- 3. Ambient temperature
- 4. Overload current and length of time in which the fuse must open.
- 5. Maximum available fault current
- 6. Pulses, Surge Currents, Inrush Currents, Start-up Currents, and Circuit Transients
- 7. Physical size limitations, such as length, diameter, or height
- Agency Approvals required, such as UL, CSA, VDE, METI, MITI or Military
- 9. Considerations: mounting type/form factor, ease of removal, axial leads, visual indication, etc.
- 10. Fuseholder features: clips, mounting block, panel mount, p.c. board mount, R.F.I. shielded, etc.

Normal Operating Current

The current rating of a fuse is typically derated 25% for operation at 25°C to avoid nuisance blowing. For example, a fuse with a current rating of 10A is not usually recommended for operation at more than 7.5A in a 25°C ambient.

Voltage

The voltage rating of the fuse must be equal to, or greater than, the available circuit voltage.

Ambient Temperature

The current carrying capacity tests of fuses are performed at 25°C and will be affected by changes in ambient temperature. The higher the ambient temperature, the hotter the fuse will operate, and the shorter its life will be. Conversely, operating at a lower temperature will prolong fuse life. A fuse also runs hotter as the normal operating current approaches or exceeds the rating of the selected fuse.

Practical experience indicates fuses at room temperature should last indefinitely, if operated at no more than 75% of catalog fuse rating.

Proper circuit protection is often the difference between machinery that keeps going and machinery that's perpetually out of service. Knowledge of best practices for selecting, installing and replacing fuses helps avoid outages that put your equipment out of commission.

