

Requirements for the thickness of the ground wire in a secondary distribution box

Article Overview

The thickness of the ground wire (equipment grounding conductor) in a secondary distribution box is determined by the rating of the overcurrent protection device, typically following NEC Table 250.122.

Equipment Grounding Conductor (EGC) Sizing

The equipment grounding conductor (EGC) is the wire that runs with your circuit conductors to provide a low-impedance path for fault current, ensuring that breakers trip quickly during a fault. Its size is based on the rating of the upstream breaker or fuse protecting the circuit, not the continuous load current . For copper conductors, typical minimum sizes according to NEC Table 250.122 are:

- o 15-20 A breaker: 14-12 AWG
 - o 30-60 A breaker: 10 AWG
 - o 100 A breaker: 8 AWG
 - o 200 A breaker: 6 AWG
 - o 300 A breaker: 4 AWG
 - o 400 A breaker: 3 AWG
 - o 500 A breaker: 2 AWG
 - o 600 A breaker: 1 AWG
 - o 800 A breaker: 1/0 AWG
 - o 1000 A breaker: 2/0 AWG
- For aluminum conductors, the size is generally two gauge sizes larger than copper for the same breaker rating .

Special Considerations for Transformer Secondary

If the ground wire runs between a transformer secondary and the panel, it may be considered a supply side bonding jumper (SSBJ) rather than a standard EGC. In this case, NEC Table 250.102(C)(1) applies, and the size may differ from the EGC table. For example, a 400 A main breaker on a transformer secondary may require a #3 AWG copper EGC to the panel, while the SSBJ could be sized at 1/0 AWG depending on the transformer and system configuration . It is important to distinguish between:

- o EGC: Runs with circuit conductors to the panel, sized by breaker rating (Table 250.122).
- o SSBJ: Connects transformer secondary neutral to ground at the first panel, sized by Table 250.102(C)(1).
- o Grounding Electrode Conductor (GEC): Runs from the panel to the earth, sized by Table 250.66 based on the secondary conductor size .



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Summary

- o For a standard secondary distribution box, the ground wire thickness is determined by the breaker rating using NEC Table 250.122.
- o For transformer secondary connections, check if the wire is a supply side bonding jumper; if so, use Table 250.102(C)(1).
- o Always verify whether the conductor is copper or aluminum, as aluminum requires a larger gauge.
- o Proper sizing ensures safety, code compliance, and reliable fault clearing. By following these NEC tables and guidelines, you can select the correct ground wire thickness for your secondary distribution box installation.

Introduction Grounding is utilized within electrical distribution systems to provide an alternative, low-impedance path around the

Attach a second grounding wire from the mounting plate (B), to the factory central grounding point. The ground

The ground wire that runs with your circuit (the equipment grounding conductor, or EGC) is primarily sized by your

Section 250.4 states the general requirements for grounding and bonding of electrical systems for both grounded and ungrounded

In 2026, NEC Table 250.122 remains the definitive reference for equipment grounding conductor sizing, while Table 250.66 covers

This chart displays the size of a ground conductor for a circuit based on the ampere rating of the circuit protection devices.

Learn about the general requirements for grounding and bonding in line with the NEC 2023.

A ground wire size chart that follows will tell you exactly the size of the grounding conductor you need. Now, it's important to

For a proper grounding system, the following step-by-step guide can be used to determine the suitable size of Equipment Grounding

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The EGC size chart is based on breaker size, not load, because the ground wire must be thick enough to withstand a

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This Section outlines the requirements for Site Electrical Distribution at the Los Alamos National Laboratory that were applicable at

Additional rules for the grounding and bonding of industrial control panels include the sizing

Learn how to ground an electrical panel step-by-step. Ensure safety, code compliance, and protect your home from

Secondary windings are either full height sheet conductors or wire conductor dependent on the voltage and kVA

This comprehensive guide will walk you through everything you need to know about grounding conductor sizing, from

Web: <https://morwarreconst.co.za>

