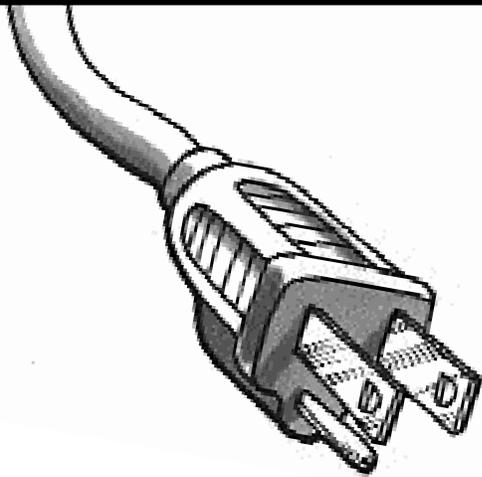


Understanding Electricity and Conductivity

Working safely around electricity requires a basic understanding of conductive materials, the hazards they present and how these hazards can be controlled.



Electricity's Pathways

Electricity always follows the easiest path to the ground. It will travel there through any conductive material, such as water, metal, some chemical solutions and the human body. If you come into contact with live electrical parts or wires—either through direct touch or via a conductor—electric current will pass through your body on its way to the ground, delivering a shock and possibly severe burns or death.

A complete circuit is necessary for electricity to flow through a conductor. A complete circuit is made when there's a source of electricity, a conductor and a consuming device such as a portable drill. Most electrical accidents occur when workers come into contact with electrical current—either directly or through conductive materials or equipment.

PROTECT YOURSELF

- Whenever you work around electrical equipment, always identify all conductors that could come in contact with electricity. Metal tools, pipes, ladders, steel wool, some chemical solutions and water are a few common conductors.
- Avoid wearing metal jewelry and headgear when working around energized parts or equipment.
- Avoid using electrical equipment when your hands are wet or sweaty.
- If you must work in a damp area, use a ground fault circuit interrupter (GFCI).
- Lockout/tagout procedures enforce the shutoff of all energized parts during equipment maintenance and repairs to protect workers from accidental contact with live electrical parts.
- If you must work with energized parts and lockout/tagout isn't possible, always use protective equipment, such as rubber boots, sleeves, blankets and mats and nonconducting tools rated for the voltage of the parts.
- Inspect all cords and power tools regularly.
- Never use damaged equipment.
- Report any damaged insulation, loose parts or connections you find.
- Never patch worn or frayed extension cords with tape.
- Never carry equipment by its cord.
- When using extension cords, never fasten them with staples, hang them from nails, suspend them by wire or otherwise damage the cord's insulation.
- Never remove or modify a guard.
- Make sure insulation is adequate for the voltage, undamaged, clean and dry.