

# OSHA Guidelines for Electrical Hazards

Occupation Safety and Health Organization (OSHA) encourages all organizations, including small businesses, to promote safe and healthy working environments for employees. The Safety and Health Achievement Recognition Program (SHARP) recognizes small business employers who follow OSHA's standards when working with hazards, such as electricity, and who prevent accidents. These standards when working with electrical and high voltage equipment include the use of insulation, grounding, guarding, electrical protective devices and following safe work practices.

## Insulation

Insulating materials, such as glass, rubber and plastic, provide an effective insulation to metals and other conductors to reduce the flow of electrical current and to prevent electric shock, fires and short circuits. OSHA guidelines indicate that the insulation must be appropriate for the voltage and temperature conditions. Certain environmental factors present in the workplace, such as moisture, oil, gasoline, chemicals or corrosive fumes, could cause certain insulators to fail. In section S of Title 29 Code of Federal Regulations, OSHA instructs employees who work with electrical equipment to check insulation before connecting equipment to a power outlet.

## Guarding

OSHA instructs organizations to guard -- inspect and enclose -- electric equipment to ensure that workers do not come in contact with any exposed electrical parts. High voltage equipment must be accessible only to employees qualified to work with it. OSHA requires that all high voltage tools and equipment is placed in an enclosed location, out of reach of other employees. Signs must alert about the electrical danger and forbid entry to unauthorized personnel. Signs may include words like "Danger," "Warning," "Caution," "High Voltage" and "Keep Out."

## Grounding

In Title 29 CFR, OSHA instructs that all electrical equipment must be grounded. Grounding creates a low-resistance path that connects electricity to earth. This prevents voltage buildup, which may create an explosion. Grounding substantially reduces the risk of injury from an electric current, especially when grounding is used in combination with other safety measures as instructed by OSHA. It helps protect the equipment operator if a malfunction causes the equipment's metal frame to become energized. Grounding will help the current to pass through to the ground without affecting the operator.

## Circuit Protection Devices

Circuit protection devices, such as fuses and circuit breakers, automatically stop the flow of an electric current if a short circuit occurs. Fuses and circuit breakers protect the equipment by opening

or breaking the circuit when too much current flows through them. OSHA requires construction sites and high-risk areas to use ground fault circuit interrupters, which interrupt the flow of electricity in less than a second to prevent electrocution.

### **Safe Work Practices**

Employees can prevent electrical accidents by following OSHA safety instructions applicable to their workplaces. These may include de-energizing equipment before inspection or repair, keeping electrical tools in good working condition with timely maintenance, exercising caution when working near electrical lines, and always using appropriate protective equipment. Employees should receive appropriate training when working with electrical hazards. OSHA describes electrical safety-related work practice requirements in subpart S of 29 CFR part 1910.