



# Electrical Safety



A person receives an electric shock whenever any part of his/her body becomes part of an electric circuit. In this case injury can occur in two ways. One way is from nerve shock which, if great enough, will cause stoppage of the lungs or heart or both. Another form of injury is from the heating effect of the current which may cause severe burns where the current enters or leaves the body. For any given voltage the injury suffered depends upon the amount of current, the course it takes through the body and the length of time the person is in the circuit. The amount of current flow will depend upon the voltage of the circuit contacted and the resistance of the circuit of which the victims' body is a part. The amount of current carried by the conductor that the person comes in contact with is of no importance provided it carries enough current to injure. Since one-tenth of an ampere or less may be fatal, all ordinary circuits have enough capacity to be dangerous. For example, the inherent hazard of a 10,000 ampere circuit is no greater than that of an ordinary lighting circuit if the voltages are identical.

The average reasonably dry, clean, non-metallic floor has enough resistance so that a person standing on it is not likely to receive a severe shock from a circuit of 220 volts or less. If the floor is wet, the person's clothing is wet, the person is sweaty, or on a metal floor, then the path of resistance through the body could be as low as 250 ohms. This 250 ohm circuit might allow a fatal shock to be received from only 30 volts. Deaths from circuits as low as 50 volts and less are on record.

Everyone is susceptible to electric shock, and if some people are more susceptible than others (for instance people with weak hearts) the difference is too small to be taken into consideration in applying safeguards. Electrical equipment should be made safe for all. Attributing a death or injury from low voltage to personal susceptibility is usually an explanation of ignorance or unwillingness to face the facts.

Protect yourself from injury. Don't be a path to ground for electricity. Do not work on live circuits. If you need to measure voltage or amperage of a circuit remove any watches or jewelry and wear proper shoes and clothing. Do not perform these measurements if you are drowsy or tired, a simple slip of your hand or meter lead could kill you. If possible use clips for one lead and measure with one hand guiding the other lead. Keep one hand behind your back if possible.