What is the can’t let go current?

For practical purposes, the maximum safe electric current for a person is just a little less than that causing the individual to 'freeze' to a conductor. This current is called the individual’s let-go current; this is the maximum current that person can tolerate and still be able to release or let go of the grasp of an energized conductor by using the muscles directly stimulated by that current.

The ‘let go’ or ‘can’t let go’ current: is a phenomenon that occurs in a certain current range above about (75 mA). This **"Let Go" threshold** is the current level where we lose control of our muscles, and the electricity causes muscles to contract until the current is removed

The human body uses an electrochemical system to control muscles. Muscles are either relaxed or contracted - the contraction occurs when an electrical signal is sent from the brain to contract the muscle. The natural state of the muscle is relaxed, so only under an electrical command will it contract. If you cannot let go of the conductor at all, then the current will continue flowing through your body and it can cause respiratory paralysis, which means you will stop breathing. Currents that are greater than 75 mA can cause your heart to experience Ventricular Fibrillation. Without immediate treatment, ventricular fibrillation **can cause death within minutes**.

In experiments conducted by C. F. Dalziel and F. P. Massoglia in 1956, they determined the can’t let go **threshold**, was 15.87 and 10.5 milliamperes (ma) for men and women respectively.

Having current - even low values - passing through the body causes muscles to contract. If you grasp a wire with your open hand, your muscles will contract around it, and you will need to fight against this command to release your hand. The current may be too strong for you to overcome, during which time the damage may already be done. Current traveling through your body will heat your flesh - burn it from the inside - and damage the nerves. If that current path goes through your heart, then you are likely to have a cardiac incident which can cause death.

The inability to release from an electric charge is more likely to occur with AC than DC because an alternating current initiates the can’t let-go response at a lower current value.

The electrical shock hazards inherent in electric equipment must be recognized, and measures must be taken to prevent electric shock accidents. The probability of receiving electric shocks must be anticipated, and protective structures, (IP-3 “Finger Safe”) guards, or other preventive measures must be considered essential in the design of machines, and in the development of safety codes, operating instructions, and work procedures.

With that understanding that there is no one size fits all answer to the lethality of electricity, it is important to focus on electrical safety regardless of the voltage involved. [Taking all precautions whenever working with electricity](https://www.creativesafetysupply.com/qa/electrical-safety/how-to-prevent-electrical-shock) will help to avoid any shocks or electrocution, whether it is likely to be deadly or not. Always assume conductors are energized until proven to be de-energized. If it is safe to do so, work with only one hand, keeping the other hand at your side or in your pocket, away from all conductive material.