



# Safety Measures <sup>ELECTRICAL</sup>

**“Elimination is the first priority!**  
Ensure a risk assessment is completed before energized work tasks are completed.”

## CSA Z462 2021 Edition: Electrical Safety Basics

**By Terry Becker, P.Eng., CESC, IEEE Senior Member**

The CSA Z462 Workplace electrical safety Standard published its 2021, 5th Edition on January 5, 2021. CSA Z462 has been adopted across all industry sectors from Victoria to Corner Brook. Even companies that fall under CSA Z462, Clause 1 Scope, Clause 1.2 Application and specifically are indicated that the CSA Z462 Standard doesn't apply to their industry (e.g. marine, telecommunications, railway and electrical utilities) are using CSA Z462 where it does apply to their facilities.

As I have mentioned before, my electrical safety journey started in 2005 while I was working in the oil and natural gas industry. Back then I had no knowledge of the arc flash hazard

and no respect for the electric shock hazard. Both electrical hazards were not identified in the workplace and there was no or limited risk control methods applied. Today my awareness, knowledge, expertise and passion for electrical safety is making a difference. In 2005 I started to learn more about the electrical hazards of arc flash and shock, starting with the “basics” and moving forward. I was hungry to learn and apply that knowledge to the benefit of electrical workers not only in the company I worked but the entire industry and ultimately all industry sectors across Canada and Internationally.

So what are the “Electrical Safety Basics?” Where do you

need to start? No matter where you are in moving along the timeline of your journey in electrical safety, there will always be something new to learn or refresh your knowledge and ultimately your electrical safety competency.

So what are the “Electrical Safety Basics?” When I am working with an employer to develop and implement an Electrical Safety Program at the beginning of the project I advise the client’s Project Manager that we need to complete a “gap analysis” in order to establish the status quo and look for opportunities for improvement. We have to spend some time to temper the knowledge of the Electrical Safety Committee members and “get us all on the same page.” What I have developed and used are checklists or sets of questions. So let’s start with some questions, the basic information you need to know:

1. **What is an arc flash and how can it be created?**
2. **When I am exposed to the electric shock hazard?**
3. **What is the definition of Working On?**
4. **Is operating energized electrical equipment, “Working On” it?**
5. **Is it against the law for workers to work energized?**
6. **Can a Qualified Electrical Worker complete energized electrical work without an Energized Electrical Work Permit (EEWP)?**
7. **What are the steps to Establish an Electrically Safe Work Condition? Is testing for absence of voltage energized electrical work?**
8. **The P.Eng. stamped report advises me some electrical equipment is “Dangerous” and “No PPE Exists” what should my company do?**
9. **Do we need to complete a qualitative Risk Assessment Procedure for a Job that includes energized electrical work tasks?**
10. **What are the steps to complete a work task’s Shock Risk Assessment?**
11. **What are the “additional protective measures” the Qualified Electrical Worker needs for the shock hazard? Do they need shock PPE if they are just going into the Limited Approach Boundary and not encroaching on the Restricted Approach Boundary?**
12. **What is the approved mark on insulated hand tools?**
13. **Can we extend the dielectric test frequency for rubber insulating gloves beyond 6 months?**
14. **Does the Qualified Electrical Worker have to complete both an visual and air test on rubber insulating gloves before every use?**

15. **What is the appropriate CAT # and voltage for the test instrument used by a Qualified Electrical Worker?**
16. **What are the steps required to complete a work task’s Arc Flash Risk Assessment?**
17. **What are the “additional protective measures” the worker needs for arc flash and are there limitations with arc flash PPE?**
18. **How do we determine if our electrical equipment is in a normal equipment condition?**
19. **How does human performance impact risk? What can a Supervisor do?**
20. **If my company has an electrical incident, specifically a shock hazard exposure, what are the approved actions to take to release the shocked worker?**
21. **If our company has an electrical incident what should we do? Who do we have to report the electrical incident to?**

There are many more questions that need to be answered. What is listed above is the basic information you need to have answers to as the Manager, Supervisor and Employee. The best method to answer them and to ensure consistency is to ensure you have a developed, implemented and audited Electrical Safety Program. It is the key to ensuring short and long term sustainable results and is used to ensure the questions listed above our answered. The Electrical Safety Program is the “toolbox” for all of the stakeholders involved, it provides the employers documented policies, practices and procedural requirements. It is the basis for effective due diligence and the “go to” document to answer the questions above. Understanding the “Electrical Safety Basics” is the starting point and a point of checking your electrical safety competency as you move through your electrical safety journey!



**Terry Becker**, P.Eng, CESC, IEEE Senior Member is the first past Vice-Chair of the CSA Z462 Workplace electrical safety Standard Technical Committee and currently a Voting Member and Working Group Leader for Clause 4.1 and the Annexes. Terry is also a Voting Member on the CSA Z463 Maintenance of electrical

systems Standard and a Voting Member of the IEEE 1584 Guide for Performing Arc-Flash Hazard Calculations. Terry has presented at Conferences and Workshops on electrical safety in Canada, the USA, India and Australia. Terry is a Professional Engineer in the Provinces of BC, AB, SK, MN and ON. Terry is an Electrical Safety Specialist, Management Consultant, and can be reached at 587.433.3777 or by email [terry.becker@twbesc.ca](mailto:terry.becker@twbesc.ca).