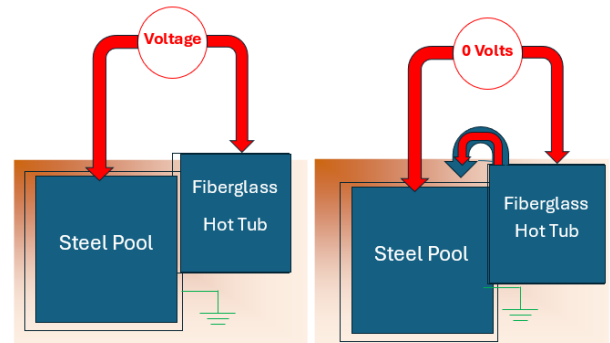


Re: The Importance of Bonding Pool Water

Pool owners may assume that if all electrical equipment is operating properly, there is no risk of shock. But differences in electrical potential between pool water, metal components and surrounding surfaces can create conditions where swimmers feel a tingling sensation or potentially experience electric shock. Licensed Electrical Contractors (LECs) can help identify these hazards and ensure pool water remains properly bonded.

When water bonding is missing or ineffective

In a recent ESA-reviewed incident, a homeowner replaced a steel pool ladder with a fiberglass ladder. Soon afterward, swimmers reported mild shocks when entering the pool. The steel ladder had provided a bonding connection to the pool water. Once it was removed, the water was no longer effectively bonded. In another incident, children felt a shock while climbing from a bonded swimming pool into its unbonded fiberglass hot tub. When the hot tub was not spilling water into the pool, there was a difference in electrical potential between the two bodies of water.



Spillover pool is electrically isolated when water stops flowing

Why water bonding matters

Bonding creates an equipotential environment by reducing voltage differences between conductive objects and the water. Stray voltage from utility or customer electrical systems can cause a voltage difference. Salt-water chlorination systems can also introduce a small voltage into pool water, which may become noticeable when water bonding is absent.

Older pools were often built with concrete and substantial conductive reinforcing steel. Modern pools may use steel shells, vinyl-liners, composite structures or fiberglass, which may provide little or no natural electrical continuity. Historical Code requirements did not always require pool water bonding, particularly when no electrical equipment was located within 3 m of the pool. Current editions of the Ontario Electrical Safety Code (OESC) require pool water bonding for new installations.

What to discuss with customers

- **Check that pool water remains bonded:** Removing a metal ladder, handrail or other component may inadvertently remove an existing bonding connection.
- **Consider equipment changes:** Adding a chlorinator or replacing a conductive component with a non-conductive one may affect the bonding path.
- **Review older installations:** A pool may have complied with the OESC when installed but may not meet current practices for water bonding.

Key takeaway

Understanding what changed can help LECs identify the cause of a shock more quickly. Whether the source is stray voltage, pool equipment or a renovation, keeping pool water continuously bonded to the electrical bonding system helps eliminate the voltage differences swimmers may feel.

For more information on the importance of pool bonding, please refer to: [ESA Bulletins](#) 68-7-*

(*Swimming pool, hot tub and spa installations*) and 68-8-*(*Bonding of swimming pool, hot tub, and spa*), along with ESA's [Grounded in Ontario episode](#): *Why New Pool and Hot Tub Code Changes Matter More Than Ever*.