

ERITECH[®]

Equipotential Bonding

of Permanently Installed Swimming Pools



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The requirements for bonding and grounding permanently installed indoor and outdoor swimming pools are provided in Article 680 "Swimming Pools, Fountains and Similar Installations" of the 2005 Edition of the National Electrical Code (NEC®).

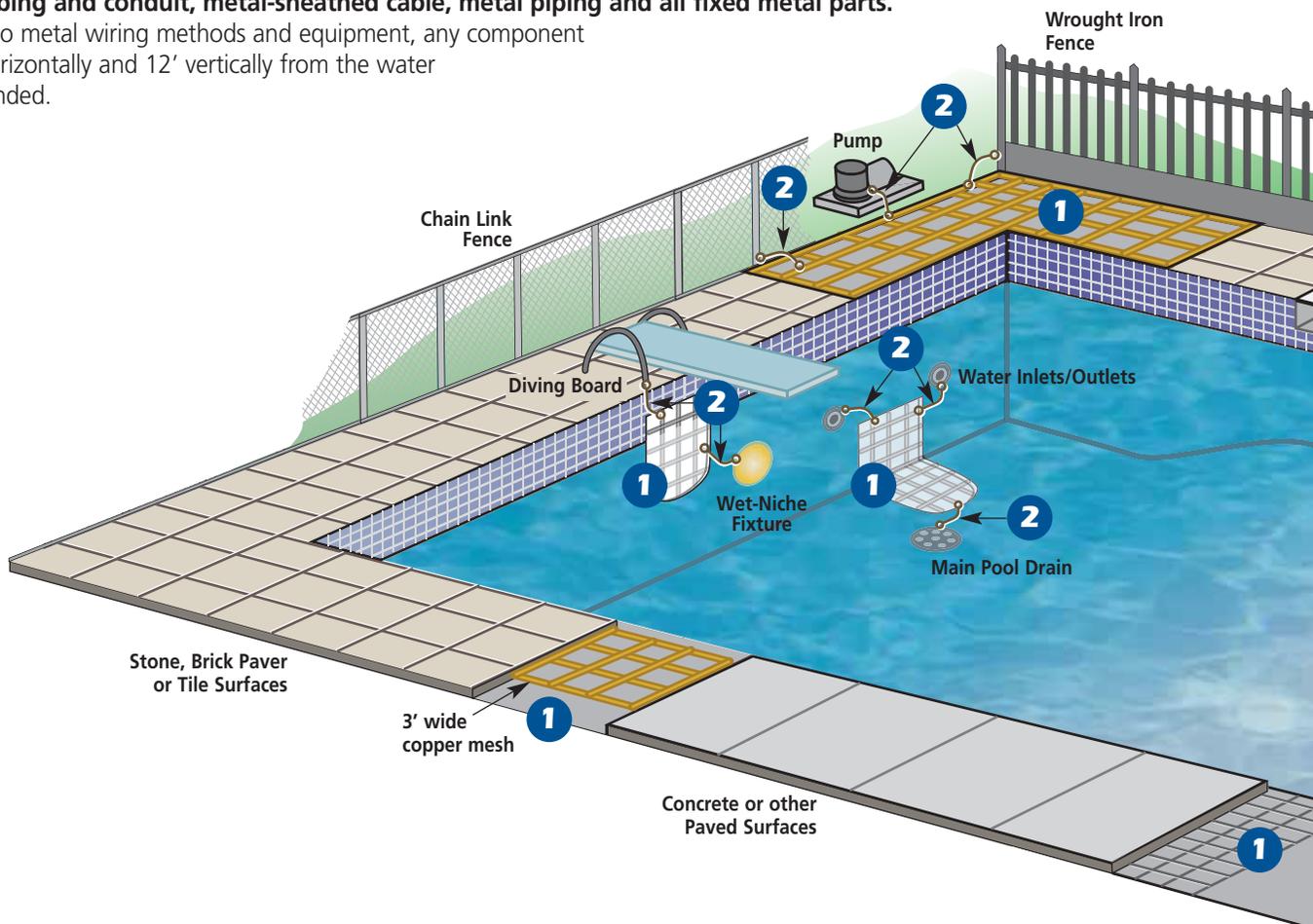
What is Equipotential Bonding?

Article 680.26 details the bonding requirements for permanently installed swimming pools in order to "eliminate voltage gradients in the pool area as prescribed." Bonding the metallic parts in and around the pool area prevents differences of potential from developing in the event of an electrical equipment fault and reduces the possibility of electric shock. The area created by bonding the metallic parts together is known as an equipotential plane.

The NEC requires bonding all of the following metallic parts in a permanently installed swimming pool with a #8 AWG solid or larger conductor.

- **Concrete reinforcing steel and all metallic structural components.** Uncoated reinforcing steel and all other metallic structures.
- **Underwater lighting.** All metallic parts (housings and mounting brackets).
- **Metal fittings.** Metal fittings for pipes, drains and water inlets.
- **Electrical equipment.** All metal parts of any electrical equipment associated with the pool including pumps and recirculating equipment, heaters and blowers and automatic covers.
- **Metallic tubing and conduit, metal-sheathed cable, metal piping and all fixed metal parts.**

In addition to metal wiring methods and equipment, any component within 5' horizontally and 12' vertically from the water must be bonded.



Equipotential Bonding Grid

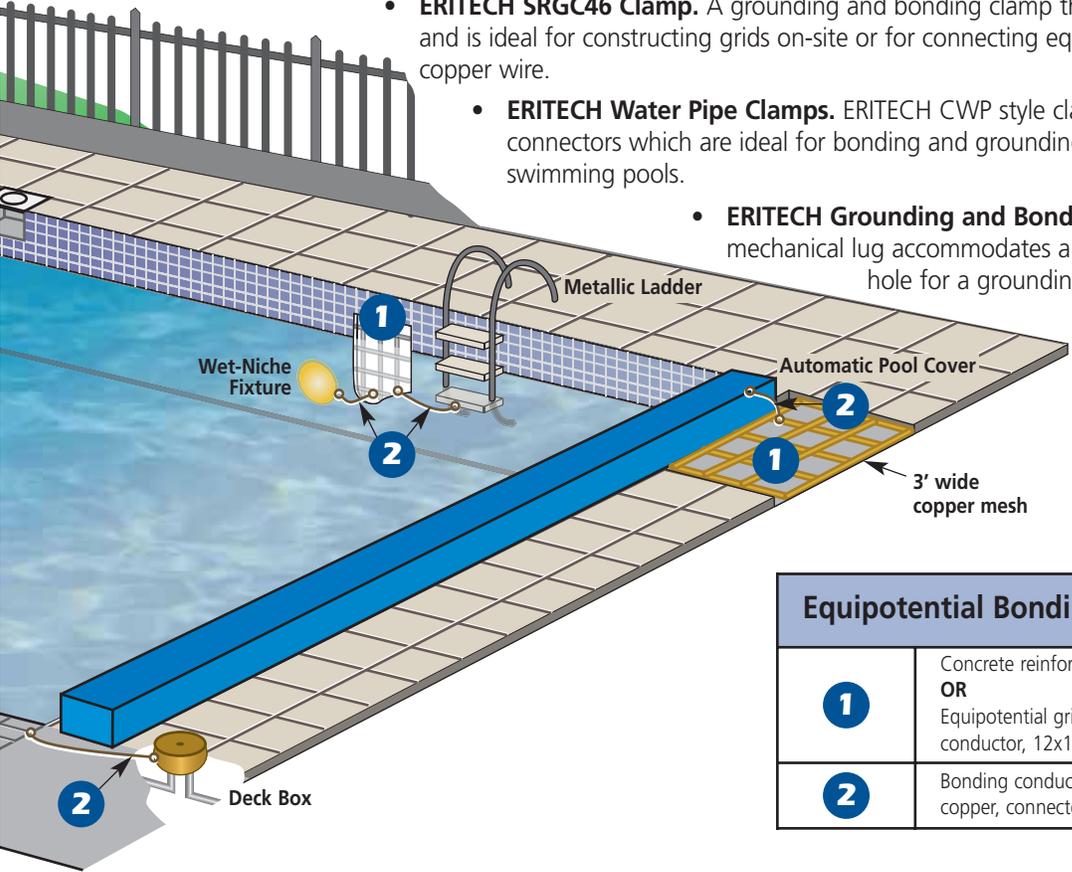
All of the bonded parts in or around the swimming pool must be attached to an equipotential bonding grid. This grid must extend 3' beyond the inside surface of the pool under concrete, stone or other paved walking surfaces. This grid can consist of the following:

- **Reinforcing Steel.** Uncoated reinforcing steel of a concrete pool (poured or sprayed, with painted or plaster coatings) can be used as the equipotential bonding grid.
- **Copper Grid.** A grid constructed with a minimum of #8 AWG bare solid copper conductors with 12" x 12" spacing.

Pools made of non-conductive materials (fiberglass composite, vinyl lined polymer or other non-conductive materials) do not require an equipotential grid that covers the full contour of the bottom and sides of the pool, however an equipotential grid is still required around the perimeter of the pool extending 3' beyond the sides of the pool.

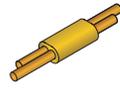
EQUIPOTENTIAL BONDING SOLUTIONS FROM ERICO® INCLUDE THE FOLLOWING:

- **ERITECH® Prefabricated Mesh.** Convenient, efficient and economical for equipotential bonding grids. Prefabricated mesh is constructed with #8 AWG solid copper conductor with 12" x 12" spacing and is available in 3' x 100' rolls and other convenient sizes.
- **CADWELD® Welded Electrical Connections.** For connecting the bonding conductor to rebar and to the copper grid. CADWELD provides a permanent, low-resistance connection needed to create a long-lasting, reliable bonding network. CADWELD connections will not deteriorate with age, cannot loosen and are made with inexpensive, lightweight and portable equipment.
- **ERITECH® Direct-Burial Grounding Clamps.** EK16 / EK17 - a timesaving, cost-effective, versatile product that combines four clamps into one. The bronze-alloy clamp consolidates separate rebar clamps, ground rod clamps, water pipe clamps and direct-burial water pipe clamps into one product.
 - **ERITECH SRGC46 Clamp.** A grounding and bonding clamp that is UL® listed for direct burial in concrete and is ideal for constructing grids on-site or for connecting equipotential bonding mesh to #8 AWG copper wire.
 - **ERITECH Water Pipe Clamps.** ERITECH CWP style clamps are UL-listed mechanical connectors which are ideal for bonding and grounding the metallic pipes and conduit of swimming pools.
 - **ERITECH Grounding and Bonding Lug.** The EL4 bronze single hole mechanical lug accommodates a #8 AWG solid conductor and has a 1/4" hole for a grounding stud.



Equipotential Bonding	
1	Concrete reinforcing steel per NEC 680.26 (B)(1) OR Equipotential grid, #8 AWG or larger solid copper conductor, 12x12 spacing per NEC 680.26(C)(3)
2	Bonding conductor, #8 AWG or larger solid copper, connected per NEC 250.8

ERITECH® EQUIPOTENTIAL BONDING

Pool Grounding - Parts List	
ERITECH® Prefabricated Mesh	
POOLMESH350 #8 copper wire, 12" x 12" mesh, 3' wide, 50' long POOLMESH3100 #8 copper wire, 12" x 12" mesh, 3' wide, 100' long	
ERITECH Direct-Burial Grounding Clamps	
EK16 & EK17 direct burial ground clamps. #10 to #2 conductor. Use on pipe up to 1", ground rods up to 1", rebar #4 to #8	
SRGC46 grid connector #10 - 4 solid or stranded wire	
ERITECH Split Bolts & Water Pipe Clamps	
CWP2JU bronze pipe clamp 1-1/4" to 2" pipe, #10 - 2	
ESB8 bronze split bolt #8 to #14	
ERITECH Grounding and Bonding Lugs	
EL4 bronze mechanical lug #14 solid to #4 stranded	
CADWELD® Copper Wire Mesh CADWELD Molds	
PGT08CU CADWELD mold with frame #8 solid copper mesh requires #15 F20 CADWELD welding material	
CADWELD Horizontal Rebar CADWELD Molds	
RRAS21D CADWELD mold with frame #8 solid to #4 rebar, requires #25 F20 welding material and B143A packing RRC511D CADWELD mold for #8 solid to #3 rebar, requires #25 F20 welding material and L160 handle clamp	
CADWELD Vertical Rebar CADWELD Molds	
RJC521D CADWELD mold for #8 solid wire with B1331K sleeve to #4 rebar, requires #45 F20 welding material and B140A packing, & L160 handle RJC511D CADWELD mold for #8 solid wire with B1331K sleeve to #3 rebar, requires #45 F20 welding material and B140A packing, & L160 handle	
CADWELD Vertical Pipe or Fence Post CADWELD Mold	
VSC1DV3C #8 solid copper with B1331K sleeve to 1-1/2" to 4" pipe requires #45 F20 welding material & B160V pipe chain support clamp	
CADWELD Cable to Lug CADWELD Mold	
GLCCE1D #8 solid with B1331K sleeve to 1/8" x 1" type GL lug #32 F20 welding material, L160 handle clamp	
CADWELD Type GL Lug	
B121CE 1/8" x 1" tin plated lug with one 9/16" diameter hole	

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